
**Geologic Controls on DNAPL Migration
And Preliminary Remedy Evaluation
Fields Brook (DETREX)
Superfund Site
Ashtabula, Ohio**



S.S. PAPADOPULOS & ASSOCIATES, INC.
Environmental & Water-Resource Consultants

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Prepared For:

U.S. EPA Region 5



Prepared By:



S.S. PAPADOPULOS & ASSOCIATES, INC.
Environmental & Water-Resource Consultant

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Executive Summary

This report has been prepared by S.S. Papadopoulos & Associates, Inc. (SSP&A) on behalf of the U.S. Environmental Protection Agency (U.S. EPA), Region V, Groundwater Evaluation and Optimization System (GEOS) program for the Detrex facility that is part of the Fields Brook Superfund Site (the site), located in Ashtabula, Ohio. This report presents: 1) an evaluation of the subsurface geology, with a focus on the interpretation of the upper surface of the compacted glacial till; 2) a summary of dense non-aqueous phase liquid (DNAPL) occurrence and potential stratigraphic controls on DNAPL migration, including an evaluation of remedy components currently in place at the site; and 3) a review of groundwater flow and quality.

SSP&A reviewed over 160 boring logs to define the top surface of the compacted till at the Fields Brook Site and prepared a structure contour map of the till surface based on apparent positive identification in 24 boring logs, in combination with 19 deeper borings/excavations that did not penetrate till but provide a maximum elevation. SSP&A's interpretation of the compacted till surface indicates that it generally slopes towards the north and northeast away from the area of the former lagoons. A depression in the compacted till surface occurs in the southern portion of the site along Fields Brook. Evidence for the presence of a depression below the former lagoon area, or for a ridge capable of preventing migration of DNAPL from the former lagoon area toward Fields Brook, was not observed.

DNAPL has been observed in the clay, sand, and silt sediments of the lacustrine unit in the source area, and along the DS Tributary, State Road and Fields Brook. While some DNAPL near the outfall of the Detrex Tributary and within Fields Brook may be attributed to surface drainage from the former lagoon area, the pooled DNAPL at the source area may also have migrated from the source area to Fields Brook within lenses, fractures and bedding planes in the lacustrine sediments, irrespective of the elevation of the till surface. Evidence of lateral DNAPL migration within the lacustrine sediments is found in monitoring well RMSMW02S, located north of the Detrex property, where an estimated 10 feet of DNAPL was observed in the bottom of the 25-feet deep well (Eckenfelder, 1990). DNAPL has not been identified at the lacustrine/till contact in the source area and DNAPL has not been observed in till or bedrock, although only a limited number of borings penetrate to these underlying geologic units. Furthermore, DNAPL has not been identified at the till/lacustrine contact in the source area. As a result, there is no clear evidence that DNAPL movement from the former lagoon area is being controlled by the till surface: DNAPL may have migrated from the source area within the lacustrine sediments towards Fields Brook, irrespective of the till surface.

Groundwater with significant concentrations of VOCs is not observed outside of the source area. This may be due to a lack of monitoring locations screened at appropriate depths, and/or the presence of limited zones of VOC-contaminated groundwater that are deeper than the South Area Interceptor Trench and/or are not in communication with the existing monitoring wells.

The elevation of the base of the slurry wall located west of the former lagoon area is lower than the DNAPL elevations observed near the source. In addition, the slurry wall appears to be keyed into the compacted till. Assuming that the compacted till restricts the downward migration of DNAPL, the slurry wall depth appears to be adequate. The horizontal extent of the slurry wall however, may not limit the migration of DNAPL around the ends of the slurry wall.

Comparison of the remedy elements that are in place versus the elevation at which DNAPL has been observed indicate that the base of the South Area Groundwater Interceptor Trench is higher in elevation than the base of DNAPL observation in the source zone. The South Area Interceptor trench may therefore not be sufficiently deep to capture DNAPL, should migration of DNAPL from the source area towards Fields Brook occur.

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REPORT

Section 1

Introduction

This report has been prepared by S.S. Papadopoulos & Associates, Inc. (SSP&A) on behalf of the U.S. Environmental Protection Agency (U.S. EPA), Region V, Groundwater Evaluation and Optimization System (GEOS) program for the Detrex facility that is part of the Fields Brook Superfund Site (the site), located in Ashtabula, Ohio. This report presents: 1) an evaluation of the subsurface geology, with a focus on the interpretation of the upper surface of the compacted glacial till based on review of site boring logs; 2) a summary of dense non-aqueous phase liquid (DNAPL) occurrences and potential stratigraphic controls on DNAPL migration, including an evaluation of remedial components currently in place at the site; and finally 3) a review of groundwater flow and quality.

1.1 Background

The Detrex facility is located at 1100 North State Road in Ashtabula, Ohio. Free phase DNAPL occurs mainly in the area of the former lagoons located in the northeast corner of the site. This area was identified as impacted by chlorinated volatile organic compounds (VOCs) and semi-volatile organic compounds¹ in the Phase I Source Control Remedial Investigation for the Fields Brook Superfund site (Woodward-Clyde Consultants, 1995). Recent site investigations delineated an area with free-phase DNAPL based on the occurrence of DNAPL in borings and wells in the area of the former lagoons at the Detrex site (URS, 2010). The 2010 delineated DNAPL area, well/boring locations and components of the source area remedy are shown in Figure 1. Components of the source area remedy shown in Figure 1 include DNAPL recovery wells, a slurry wall, the DS Tributary Groundwater Interceptor Trench and the South Area Groundwater Interceptor Trench (located between the source area and Fields Brook), and small excavations/interceptor trenches along DS Tributary and State Road.

The latest Five-Year Review report for the site (U.S. EPA, 2009) indicated that the continued presence of DNAPL is considered a principal threat at the Detrex facility and its presence at the site may present a risk to Fields Brook, located south and west of the facility. Concerns have been raised about the effectiveness of the source control remedy at the Detrex site, and continued migration of DNAPL from the source area. SSP&A's review has focused on DNAPL occurrences at the source area near the former lagoons and along Fields Brook south of the Detrex facility.

Within this context, S.S. Papadopoulos & Associates (SSP&A) has reviewed existing boring logs to provide the U.S. EPA with an updated interpretation of the upper surface of the till unit at the Detrex site, and its potential control over DNAPL migration. In addition, SSP&A has

¹ Primary VOCs include 1,1,2,2-trichloroethane, 1,2-dichloroethene, tetrachloroethene, and trichloroethene. Primary semi-VOCs include hexachlorobenzene, hexachlorobutadiene, and hexachloroethane.

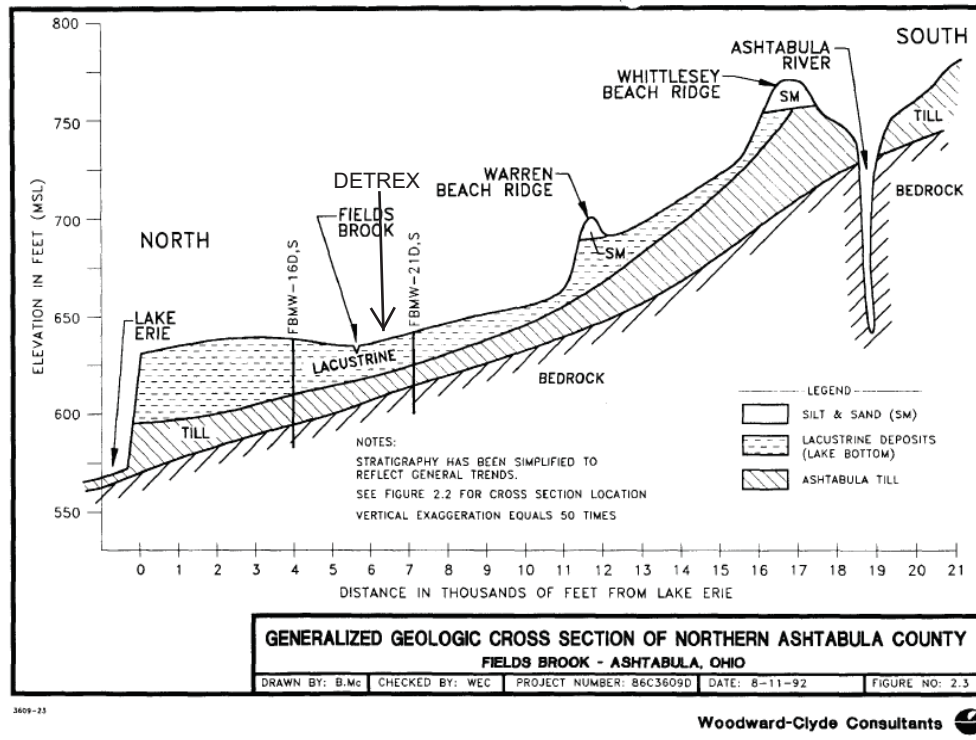
compiled information on the elevation, geologic unit, and the location of DNAPL occurrences, to compare to the remedial components in place and perform a preliminary assessment of remedy performance. Finally, observations regarding groundwater contamination by VOCs in the site area were made.

Section 2

Geology and Interpretation of Boring Logs

2.1 General Site Geology

The subsurface materials at the Fields Brook site consist of fill, overlying lacustrine clay/silt laying on top of glacial till and shale bedrock (Figure 2). The lacustrine clay/silt deposits represent the lacustrine plain of nearby Lake Erie and the sediments range from massive clay to silt and silty sand with occasional sand lenses. Bedrock consists of shale that is often thinly bedded and fractured. Deep borings in the site area indicate that the bedrock surface slopes northerly towards Lake Erie and is overlain by less than 10 to about 20 feet of till as shown in the figure below (Woodward Clyde Consultants, 1992)².



Bedrock at the Detrex site occurs at elevations of about 590 to 600 feet MSL (mean sea level). Similar to the underlying bedrock, on a regional scale the surface of the underlying till slopes towards the north.

² The trace of this cross section extends from the Ashtabula River southeast of the Detrex site to Lake Erie. The section crosses Fields Brook about 1500 feet east of the Detrex property.

2.2 Interpretations of the Till Unit from Boring Logs

The Detrex site is underlain by the Ashtabula till and possibly older till units overlying shale bedrock. The Ashtabula till is described by White and Totten (1979) as a “calcareous silty clay till, sparingly to moderately pebbly”. According to Szabo et al. (1988), the Ashtabula till contains multiple lithofacies. Szabo and Bruno (1997) describe two sub-sequences consisting of a massive matrix-supported diamicton overlain by a stratified diamicton. The upper part of the Ashtabula till has been reworked in places along the ancestral lakeshore of Lake Erie during/prior to deposition of the lacustrine sediments. Based on boring log descriptions alone, it is difficult to distinguish between the reworked till, the stratified till, and the overlying lacustrine deposits. This is due in part to the lack of detail and inconsistencies in the boring logs, but also is a result of the variable character of the top of the till and similarity of the upper till to the lacustrine deposits as described in the boring logs. In addition, the Ashtabula till may overlie older till units which may be difficult to distinguish based on boring log descriptions.

Typically, in a boring log a till is indicated by the following characteristics: clay or silty clay, with little or some unsorted gravel, sand, or angular bedrock fragments; very stiff to very hard consistency; high blow counts (or "N-value") or pocket penetrometer (PP) readings; dry conditions; unsorted and/or unlaminated texture; color from brown (indicates oxidation or leaching) to grey (unoxidized/unweathered); and perhaps most importantly, located immediately above bedrock.

SSP&A evaluated over 160 boring logs to identify the depth/elevation of the till surface. Identification of the top of the till surface was problematic due to the clayey nature of the lacustrine sediments and limitations of the information typically included in the boring logs. The top of the till surface was not easily distinguished as a hard, resistant material, possibly due to reworking of the till post deposition and limited data reported in the logs. As a result, the ability to distinguish between the overlying lacustrine deposits and the till was limited and even in cases where bedrock was encountered, the identification of the upper surface of the till was not always straightforward.

For purposes of this investigation, where the presence of a compacted till is being evaluated to assess the potential for downward migration of DNAPL, the upper surface of the till was picked where the material was resistant and hard (usually characterized by elevated blow counts of 20 or more per foot, or pocket penetrometer readings of 4.5 or higher). In addition, a lack of laminations, evidence of bimodal grain size distribution (clay with cobble/gravel/bedrock clasts), very stiff to very hard consistency, driller/geologist notes on the logs, and stratigraphic position immediately above the shale bedrock were also characteristics used to define the top of the compacted till surface. SSP&A's evaluation included the borings and test pit excavations located at the site, along Fields Brook, and in the regional vicinity of the site. Compacted till was not encountered during excavation and remediation of sediments along Fields Brook;

however, the depth of the excavations and borings provide an indication of the minimum depth to the top of the compacted till surface³.

SSP&A's picks for the depth to the top of the fill, lacustrine sediments, till, and bedrock surfaces were compiled and the data visualization software EnviroInsight version 7 (HydroAnalysis, 2009) was used to generate cross sections and aid in data interpretation. The top of the compacted till surface elevations were gridded via ordinary kriging using a default linear variogram and no underlying trend. This study also was aided by the construction of a 3-dimensional model of the geologic units, remedy components, and DNAPL observations using Leapfrog Hydro, version 1.3.1 (Aranz Geo Limited, 2010).

2.2.1 Results

SSP&A's stratigraphic picks for the till surface are summarized on Table 1 and the boring logs are included in Appendix A. The top of the compacted till unit could be picked with reasonable certainty at six locations on the Detrex site including five bedrock borings (DETMW01D, DETMW02D, DETMW03D, DETMW17D, DETMW18D) and boring DETSB-13. At the remaining locations on the Detrex site and along Fields Brook, it was determined that compacted till was not encountered in the boring and the upper surface of the till occurs below the bottom elevation of the boring; these locations are indicated by "<" on Table 1. The contact between compacted till and the overlying lacustrine sediments/reworked till also was identified at eighteen regional borings located off site. These locations are identified as FBMW-x on Table 1.

Based on SSP&A's interpretation of the boring logs, the unit identified as till by Detrex's consultant, URS, is the lacustrine clay/reworked till and not a compacted lodgement till overlying bedrock. This is often evidenced by relatively soft sediments (low blow counts) and the observation that a nearby boring that penetrated to deeper depths did not encounter bedrock. Figure 3 shows an example where Detrex consultants identified till at a depth of 12 feet BGS (below ground surface) due to a color change and the presence of rock fragments in the boring; however, the blow counts remain relatively low to at least 22 feet depth and below that depth do not increase much above 20 counts/foot. This can be compared to boring FBMW-16D where the blow counts in the till material exceed 30 counts/foot (Figure 4). Identification of the till is difficult as a result of the post-depositional reworking of the till followed by deposition of overlying lacustrine clay/silt.

³ Compacted till elevations were estimated along cross sections presented in Conestoga-Rovers, 2001; however due to poor reproduction quality of maps, specific boring locations could not be deciphered. The maximum compacted till depths were determined based on the Conestoga-Rovers cross sections and point data were assigned based on available/legible information for TT- and TP- locations. These top of compacted till elevation locations are therefore approximate. Additional detail is found in Table 2 for the TT- and TP- locations.

2.2.2 Regional Till Surface and Structure Contour Map for Till Surface

A structure contour map of the surface of the compacted till on a regional scale and the posted data values are shown in Figure 5. The contour lines are based on kriging the top elevation of the compacted till at 24 locations where the till elevation was identified and the 19 locations on or near the site where deeper borings could provide a maximum till elevation. Regionally, the top of the compacted till surface slopes towards the north, with elevations of about 630 feet MSL and higher south of Fields Brook to elevations less than 600 feet MSL north of the Detrex facility. A depression in the top of the till surface occurs along Fields Brook which suggests that the brook may occupy a post-glacial erosional feature or other depression in the till surface. As a result, the thickness of the compacted till may be minimal along Fields Brook. The direction of flow of DNAPL from the source area at the former lagoons, if controlled by the till surface as shown in Figure 5, would be primarily towards the north and possibly northeast.

A structure contour map of the till surface on and near the Detrex site is shown in Figure 6. The elevation of the top of the compacted till surface is about 610 feet MSL in the area of the former lagoons with the surface sloping towards the north and also towards Fields Brook in the southern portion of the site. The till 'picks' shown in Figures 5 and 6 are undeniably based on subjective interpretation of information presented in the boring logs, and these same boring logs could be reinterpreted resulting in a few-foot difference in the top of the till surface elevation. However, several iterations of review of the top of the till surface elevation yielded similar results and re-interpretation of borings where the pick was particularly uncertain did not significantly alter the structure contour map for the compacted till surface. Within this context, we therefore consider that the interpretations presented in Figures 5 and 6 represent an appropriate estimate of the surface elevations of the compacted till.

2.2.3 Comparison with Previous Work

Significant differences exist between the SSP&A till elevations and previous work by URS, as shown in Figure 7. Notable exceptions are that: 1) the SSP&A interpretation does not include an elevated ridge of till between the source area and Fields Brook; and 2) the till surface is significantly lower in elevation in the southwest part of Detrex site, particularly in the area near the South Area Groundwater Interceptor trench and Fields Brook. A comparison of the SSP&A and URS top of the till surface grids indicates that the top of the SSP&A till surface is lower by a mean value of 9.7 feet, within a range of -4.4 (i.e. 4.4 feet higher) to +20 feet lower than the URS till surface.

Following the 2005 discovery of DNAPL along Fields Brook, a number of borings were advanced in the area north of Fields Brook on the Detrex site and FBAG (2005) prepared a structure contour map of the top of the lacustrine clay based on these borings (reproduced as Figure 8). Of note is the observation that top elevation of the lacustrine clay identified by FBAG is similar to the top elevation of the till as identified by URS in the area of the South Interceptor Trench.

2.2.4 Conclusions on Till Surface

SSP&A reviewed over 160 boring logs to define the upper surface of compacted till at the Fields Brook Site. Considerable uncertainty remains in the till elevation stratigraphic picks due to limited details in the boring logs, post-deposition reworking of the till, and similarity with the overlying lacustrine sediments. The SSP&A interpretation of the top of the till surface indicates that regionally, the till surface slopes towards the north-northwest towards Lake Erie. At the site, the surface slopes primarily towards the north and northeast, away from the area of the former lagoons, with a depression in the till surface occurring in the southern portion of the site along Fields Brook. Evidence for the presence of a depression below the former lagoon area or for a significant ridge between the former lagoon area and Fields Brook was not observed.

Section 3

DNAPL Observations and Preliminary Evaluation of Remedy

Several events and investigations have presented evidence of the presence of DNAPL within the subsurface at the Detrex facility and in its vicinity, as reported in several documents, for example:

- Woodward Clyde 1997, Supplemental Site investigation;
- Woodward Clyde 1997, Final SCRI Report, Source Control Operable Unit, Fields Brook Site, Ashtabula, Ohio;.,
- Conestoga-Rovers & Associates 2001, FBAG DNAPL Investigation;
- Fields Brook Action Group 2005, DNAPL investigation;
- URS, 2008. Southern Area Groundwater Interceptor Trench Construction & Installation Report, Detrex; and
- U.S. EPA 2009, Second Five-Year Review Report for Fields Brook Site.

3.1 Summary of DNAPL Observations

3.1.1 DNAPL in Boring Logs, Wells, Test Pits and Trenches

SSP&A compiled observations of DNAPL in boring logs, monitoring wells, test pits, and trenches at the source area and along Fields Brook to determine the elevation of DNAPL in the subsurface in these areas. Soil data were also reviewed to identify soil concentrations that are consistent with the presence of DNAPL⁴. These observations collectively indicate the elevation at which DNAPL was mobile at some point in the past (and possibly present).

In some instances, DNAPL was reported to collect in the bottom of a monitoring well, indicating the minimum elevation of the top of the mobile DNAPL at that location. Such observations can be used to evaluate the potential for DNAPL migration and provide a simple means to evaluate the efficacy of remedial components. The elevations of DNAPL occurrences compiled for the site are summarized in Table 2 and the range of elevations of DNAPL occurrences based on boring logs and/or well observations are shown in Figure 9.

DNAPL currently exists as a mobile phase in the area of the former lagoon, as evidenced by the accumulation of free-phase DNAPL into wells located in this area. Wells with historic

⁴ Soil concentrations of VOCs and SVOCs were evaluated to determine if the concentrations were consistent with the presence of DNAPL based on the method provided by Kueper and Davies (2009). A soil sample from location GP44-01 was determined to be consistent with the presence of DNAPL at 4.5 to 5 feet BGS. Additional soil samples that were consistent with the presence of DNAPL were located along Fields Brook west of State Road including location GP4-01 (at a sampling depth of 6.5-7 ft), GP11-01 (at a sampling depth of 6.5-7.5 ft), GP21-01 (at a sampling depth of 5-6 ft) and GP25-01 (at a sampling depth of 5-6 ft).

free-phase DNAPL accumulations include DETMW-05S, DETMW-06S, DETMW-07S, DETMW08S, DETMW-10S, and RMSMW02S. The driving hydraulic head of DNAPL in the former lagoon area was at about 632 feet MSL in 1997 (well DETMW07S; Woodward Clyde 1997). In 2010, 2.3 feet of DNAPL were observed in the bottom of boring DPT-7/0209; 0.6 feet of DNAPL in the bottom of well DPT-3/0209, and 1 foot of DNAPL in the bottom of well DETMW-10S. The accumulation of DNAPL in the bottom of these wells indicates that the minimum hydraulic head of DNAPL in the source area is at least 617 feet MSL at DPT-7/0209; at least 622.5 feet MSL at DPT-3/0209; and at least 621 feet MSL in DETMW-10S.

DNAPL with measurable thickness was observed predominantly in the north-east corner of the site near the former lagoon, in well DETMW-12S located in the vicinity of the Detrex Tributary outfall, and along Fields Brook. The upper elevation of observed DNAPL in the former lagoon area was 632 feet MSL measured in well DETMW07S. The elevation of the base of DNAPL observed at locations near the former lagoon ranges from about 623 to 611 feet MSL. Observation of DNAPL in DPT-12/0209 at 611 feet MSL is significant because it identifies the lowest elevation of DNAPL observed near the source area. Borings installed by URS in 2009 did not identify the base depth of DNAPL in the source area since the borings were terminated when DNAPL was encountered (URS, 2010). As a result, the base elevation of occurrence of DNAPL in the source area has not been fully defined.

The upper elevation of DNAPL along Fields Brook occurs at about 617 feet to 606 feet MSL (Figure 9). The base of DNAPL along Fields Brook occurs at elevations from about 617 to about 603 feet MSL.

Following the discovery of DNAPL along Fields Brook during routine maintenance activities in 2005, a number of test pits and borings were installed between the source area and Fields Brook. No observations of free-phase DNAPL were noted in any of these installations. In addition, an approximately 1,200 foot-long linear trench was excavated along Fields Brook on the north side of the floodplain. The depth of excavation of this trench was not reported but it appears to be about 6 feet deep based on a photograph (FBAG, 2006). Free-phase DNAPL was not observed in the trench excavation; however, a sheen was observed at various locations in the trench (FBAG, 2006a), as well as elevated PID readings, and odors consistent with Detrex's DNAPL (FBAG, 2006b). The locations of these observations in the trench are unknown, but if they were observed in the area distal from the Detrex Tributary outfall, this would suggest that DNAPL that had migrated from the upland source area through lacustrine sediments was encountered near the base of the trench.

3.1.2 DNAPL Presence in Clay and Silt/Sand Lacustrine Sediments

In all cases, DNAPL has been observed only within the lacustrine unit both at the source area and along Fields Brook. Within the lacustrine sediments, the DNAPL was observed in sand/silt as well as in clay sediments. At locations along Fields Brook, the DNAPL was most commonly observed in silt/sand materials above the lacustrine clay, however, the thickest occurrence of DNAPL along Fields Brook was observed within the lacustrine clay unit (several feet of DNAPL in borings GP31-01 and GP32-01). In the source area, DNAPL has been observed within sediments ranging from sand (e.g., DPT-03/0209) to silty clay (e.g., DPT-10/0209).

The DNAPL observed along Fields Brook either migrated: 1) through lacustrine sediments from the source area, or 2) through lacustrine sediments from the unlined Detrex tributary outfalling near location DETMW-12S, or a combination of both. As discussed below, it may have done both to some extent at various times in the past.

A historical air photo of the Detrex facility (Figure 10) shows that the main channel of Fields Brook near the Detrex Tributary outfall was different from its current location; and the outfall of the Detrex Tributary appears to have flowed westerly towards the confluence with Fields Brook (as indicated by the white-shaded path in Figure 10). These two reaches appear to have been altered so that the current location of Fields Brook occupies a portion of the historic channel of the Detrex Tributary. The 2001 DNAPL removal limits conducted as part of the site remedy excavated the historic channel of the Detrex Tributary. A comparison of the 1970 photo with the occurrences of DNAPL along Fields Brook indicates that some of the DNAPL occurrences are likely due to migration of DNAPL originating along this surface water route.

Test trenches TT19-01 and TT18-01 appear to transect the former location of the Detrex Tributary; the logs for these installations show about four feet of 'clean' silt (PID=0) overlying clay with DNAPL on/near the clay surface. The area is thought to have been regraded/reworked during reconfiguration of the former Detrex Outfall, and it is not known if the 'clean' silt was fill material or if it is native streambed sediments. If the silt is native undisturbed streambed sediments, then the DNAPL did not originate within the stream bed at that locations but it could have migrated as the result of pooling at the former Detrex Outfall and migrated along the clay surface to lower elevations. If this is the case, the migration has not been towards the east as evidenced by location TT17-01 (located east of TT18-01) which had PID readings of 0 in the silt and underlying clay.

The 2005 DNAPL observations along Fields Brook were reported to occur at depths of 6-8 feet below ground surface. If the depth of the 2001 excavations along the former Detrex Tributary extended below the elevation of the 2005 occurrences of DNAPL then these observations are not consistent with a surface water discharge source from the Detrex Tributary for the 2005 DNAPL observations. Unfortunately, information on the depth of the 2001 excavations, in addition to the specific depth of the 2005 observations is sparse and SSP&A has been unable to obtain specific details.

The DNAPL observations along Fields Brook are all lower in elevation, or similar elevation to the DNAPL occurrences attributed to the Detrex Tributary source (Figure 9). This observation is not inconsistent with a source along the Detrex Tributary; however, sufficient details are not available to determine if all the DNAPL observed along Fields Brook can be attributed to this source. The elevations of DNAPL are also consistent with a source through the lacustrine sediments from the former lagoon area.

A number of test pits and borings were installed in the area between the Detrex operations area and Fields Brook following the 2005 discovery of DNAPL along Fields Brook. DNAPL was not identified in any of these installations; however, DNAPL could occur in small, isolated, and highly unpredictable fractures, bedding planes, and lenses in the lacustrine sediments. The likelihood of intercepting such a feature during random excavations is minimal at best. In addition, the stringers of DNAPL appear to be very limited in lateral extent. For

example, at boring GP44-01 DNAPL was determined to be present based on soil concentrations (also consistent with crystalline material observed in the boring log and odor). Boring GP44A-01, presumably located close to GP44-01, did not contain particularly elevated OVA reading and gave no indication of the nearby presence of DNAPL.

3.1.3 Conceptual Model of DNAPL Migration

DNAPL has been observed in the clay, sand, and silt sediments of the lacustrine unit in the source area and along Fields Brook. The lenses, fractures and bedding planes in the lacustrine sediments provide a pathway for migration of pooled DNAPL from the source area, which could potentially reach Fields Brook, irrespective of the till surface. Also, DNAPL near the outfall of the Detrex Tributary may be attributed to surface drainage from the former lagoon area via the former Detrex Tributary.

The sediments underlying the source area are clay-rich lacustrine deposits, with some sandy/silty lenses, overlying till and bedrock. DNAPL migration through such sediments would be expected to first migrate to more permeable materials that are accessible, followed by migration into fractures, bedding planes, and thin lenses as capillary pressures increase. Evidence of lateral DNAPL migration within the lacustrine sediments is found in RMI monitoring well RMSMW02S, located on the adjacent property north of the Detrex site on the adjacent property, where an estimated 10 feet of DNAPL was reported in the bottom of the well. The DNAPL was found within a zone of more permeable clayey silt with silt and fine sand laminations at a depth of about 15 to 24 feet BGS (Eckenfelder, 1990).

DNAPL has not been identified at the lacustrine/till contact in the source area and DNAPL has not been observed in the till or bedrock, however, only a limited number of borings penetrate to these underlying geologic units. As a result, there is no clear evidence that DNAPL movement from the former lagoon area towards Fields Brook is controlled by the till surface.

If the till surface is the lower boundary of DNAPL migration from the source area of the former lagoons, DNAPL may have migrated towards the north beneath and beyond the RMI property. The slight north-eastern slope of the till in the source area suggests that DNAPL migration may have occurred to the northeast beneath the Elkem site and possibly the former TDI site. DNAPL migration could also occur from the source area towards the west-southwest and reach Fields Brook where a depression in till elevation is observed.

The presence of pooled DNAPL at the source area indicates that DNAPL is currently mobile and that migration of DNAPL away from the source area is ongoing. Migration of DNAPL laterally away from the source area will continue to occur within the lacustrine sediments, and possibly through the underlying till and bedrock, until the DNAPL achieves a state of residual saturation. Residual saturation of DNAPL will be achieved by the continued lateral (and possibly vertical) migration of DNAPL away from the source area. Downward migration of DNAPL to the till surface, possibly along the till surface, and into bedrock may have occurred in and near the area of the former lagoons. The ability of the till to impede further downward migration of DNAPL to the bedrock through fractures in the till is unknown.

3.2 Preliminary Remedy Evaluation

To evaluate the adequacy of the remedy at addressing DNAPL present at the site, the elevations of DNAPL observations were compared to the elevations of the remedy components.

3.2.1 South Area Interceptor Trench

A cross-section prepared by URS showing the elevation of the South Area Interceptor Trench is included as Figure 11 (the location of the South Area Interceptor Trench and its base elevation are shown in Figure 9; base elevations range from 615 to 614.5 feet MSL along segment #3, from 614.5 to 619 feet MSL along middle segment #1, and from 615 to 623 feet MSL along the western segment, segment #2). Figures 12 and 13 show North-South cross-section A-A' and East-West cross-section B-B' (the locations of the cross-sections are shown on Figure 6). The range of elevations where DNAPL was observed in the boring logs and/or wells are shown in Figures 12 and 13 (and described in Table 2). Borings shown on the cross-sections are projected over a maximum distance of 80 feet.

Figure 12 shows that the elevation of the base of the South Area Interceptor Trench is higher in elevation than the DNAPL observed near the Detrex source area (well DPT-12/0209 with DNAPL observed between 611 and 615 feet MSL), and close to the elevation of the DNAPL observed along Fields Brook. The South Area Interceptor trench therefore may not be sufficiently deep to capture migration of DNAPL from the source area towards Fields Brook.

3.2.2 Northwest Slurry Wall and Interceptor Trench

Figure 13 shows that the elevation of the base of the slurry wall located west of the former lagoon area is deeper than the DNAPL elevations observed near the source. In addition, the slurry wall appears to be keyed into compacted till. Assuming the compacted till acts as a confining unit to DNAPL migration, the slurry wall depth appears to be adequate. The horizontal extent of the slurry wall however, may not limit the migration of DNAPL around the ends of the slurry wall. The base elevation of the DS Tributary Groundwater Interceptor Trench at 614 feet appears to be higher in elevation than the elevation of DNAPL observed in the former lagoon area, and is not likely to fully capture DNAPL migrating westward from the source area. Monitoring data are currently not present in close proximity to the extremities of the slurry wall.

3.2.3 DNAPL Recovery System

A pilot system of DNAPL recovery wells and SVE system in the area of the former lagoons has been operated at the Detrex site since 2002. The recovery wells have collected a total of approximately 16,000 gallons since operation began. DNAPL recovery from these wells has declined and the system has been plagued by operation and maintenance problems (URS, 2008).

Section 4

Groundwater Flow and Quality

The results of monitoring during 2010 (URS, 2010) at the Detrex site are summarized in Figures 14 through 16 (water levels measured in wells and results of water quality analyses). The direction of shallow groundwater flow at the site is towards the north (DS Tributary) and south (Fields Brook) from an area of mounded groundwater in the central part of the site. Shallow groundwater flow at the adjacent RMI Titanium Company Sodium Plant, located directly north of the Detrex site, indicates that shallow groundwater generally flows towards the southeast across that property towards the DS Tributary. The direction of groundwater flow in the deeper groundwater is towards Fields Brook; however on a region scale, the deep groundwater flows towards the Ashtabula River and Lake Erie (towards the west and north).

Figure 16 (after URS 2010) shows that in January 2010, in all but one of the monitoring wells that do not contain DNAPL (DETMW-04S), concentrations of the contaminants of concern were below detection limits. Historic concentrations of TCE in well DETMW-04S range from 32,000 to 51,000 µg/L. URS (2010) indicates that TCE was found in well DETMW-10S at 70,500 µg /L in January 2010, however TCE is not usually detected in other monitoring wells downgradient of this well. Historic detections of TCE include at 20 µg/L in well IT-0601 in September 2006, and detections in wells MW-17S (up to 1.6 µg/L), MW-17D (26.1 µg/L), and MW-18D (1.71 µg/L). The presence of TCE in the deep wells MW-17D and MW-18D raises concern that VOC-contaminated groundwater may be present at depth at the site and not currently monitored by existing wells.

The concentration of VOCs detected in groundwater collected in the South Area Interceptor trench sumps indicate that concentration of VOCs captured in South Area Interceptor Trench Sump #1 and #3 are minimal (excluding concentrations impacted by Frac tank water pumped into sump #1 during 2009). The concentration of VOCs detected in groundwater collected in Sump #2 is up to about 300 µg/L.

The presence of DNAPL at the site is not reflected in the groundwater quality of currently monitored wells. This may be due to the wells not screened at sufficient depth to capture the plume, and/or the plume exists in isolated zones within the subsurface that are not in hydraulic connection to the existing monitoring wells.

Section 5

Summary of Observations

A summary of observations made as part of this study is listed below:

1. SSP&A reviewed over 160 boring logs to define the top of the compacted till surface at the Fields Brook Site. SSP&A prepared a structure contour map of the till surface based on the identification of the compacted till in 24 boring logs, in combination with 19 deeper borings/excavations that did not penetrate the till, but provided a maximum till elevation.
2. Considerable uncertainty remains in the till elevation stratigraphic picks due to incomplete details in the boring logs, post-depositional reworking of the till, and similarity with the lacustrine sediments. SSP&A's interpretation of the compacted till surface indicates that the surface slopes primarily towards the north and northeast away from the area of the former lagoons. A depression in the till surface occurs in the southern portion of the site along Fields Brook.
3. Evidence for the presence of a till depression below the former lagoon area, or for a significant ridge between the former lagoon area and Fields Brook, was not observed.
4. Interceptor trench borings by URS identified till based on geoprobe borings at an elevation of about 620 feet MSL. FBAG (2005) conducted a geoprobe investigation in 2005 and identified the top of the lacustrine clay at about the same elevation as URS picks the top of the till in the area of interceptor trench.
5. SSP&A compiled data on the elevation of DNAPL observed in borings/test pits. DNAPL is found within the lacustrine unit at elevations ranging from 632 to about 603 feet MSL. Elevations in the source area range from 632 to 611 feet MSL. Elevations of DNAPL near Fields Brook range from about 617 to 603 feet MSL.
6. DNAPL has not been observed at the lacustrine/till contact, or within the till or bedrock, although there are few sufficiently deep borings to identify this. As a result, there is no clear evidence that DNAPL movement from the former lagoon area is controlled by the till surface. DNAPL may have migrated from the source area within the lacustrine sediments toward Fields Brook, irrespective of the till surface.
7. DNAPL currently exists as a mobile phase in the area of the former lagoon, as evidenced by the accumulation of free-phase DNAPL in wells located in this area. Wells with historic free-phase DNAPL accumulation include DETMW-05S, DETMW-06S, DETMW-07S, DETMW08S, DETMW-10S, and RMSMW-02S.
8. Evidence of lateral DNAPL migration within the lacustrine sediments is found in monitoring well RMSMW02S, located north of the Detrex site on the adjacent property, where an estimated 10 feet of DNAPL was reported in the bottom of the well. DNAPL was found within a zone of more permeable clayey silt with silt and fine sand laminations.
9. DNAPL migration may be ongoing through silt/sand lenses, which occur throughout the lacustrine sediments, and also through fractures and bedding planes in the lacustrine sediments.

10. The former Detrex Outfall and Detrex Tributary is a very likely source of some DNAPL found along the historic channel of the Detrex Tributary: however, the extent of DNAPL migration from this documented source is unknown.
11. The elevation of DNAPL observations along Fields Brook are all lower, or similar to, the elevation of DNAPL occurrences attributed to the Detrex Tributary source. This observation is not inconsistent with a source along the Detrex Tributary; however, sufficient detail is not available to determine if all DNAPL observed along Fields Brook can be attributed to this source, and the elevations of DNAPL can also be interpreted as consistent with a source through the lacustrine sediments from the former lagoon area.
12. The base of the South Area Groundwater Interceptor Trench is higher in elevation than the base of DNAPL observation in the source zone. The South Area Interceptor trench may not, therefore, be sufficiently deep to capture DNAPL migrating from the source area toward Fields Brook. In addition, DNAPL may have migrated through the lacustrine clay towards Fields Brook at an elevation lower than the bottom of the South Area Groundwater Interceptor Trench.
13. The elevation of the base of the slurry wall located west of the former lagoon area is deeper than the DNAPL elevations observed near the source. In addition, the slurry wall appears to be keyed into compacted till. Assuming the till acts as a barrier to further vertical (downward) DNAPL migration, the slurry wall depth appears to be adequate. The horizontal extent of the slurry wall however, may not limit the migration of DNAPL around the ends of the slurry wall: this is particularly salient given the broadly northward dipping character of the till surface.
14. The direction of shallow groundwater flow at the site is toward the north (DS Tributary) and south (Fields Brook) from an area of mounded groundwater in the central part of the site. The vertical hydraulic gradient is downward.
15. Groundwater with significant concentrations of VOCs is not observed outside of the source area. This may be due to a lack of monitoring points screened at appropriate depths, or the presence of limited zones of VOC-contaminated groundwater that are deeper than the South Area Interceptor Trench and/or are not in communication with the existing monitoring wells.

Section 6

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FIGURES

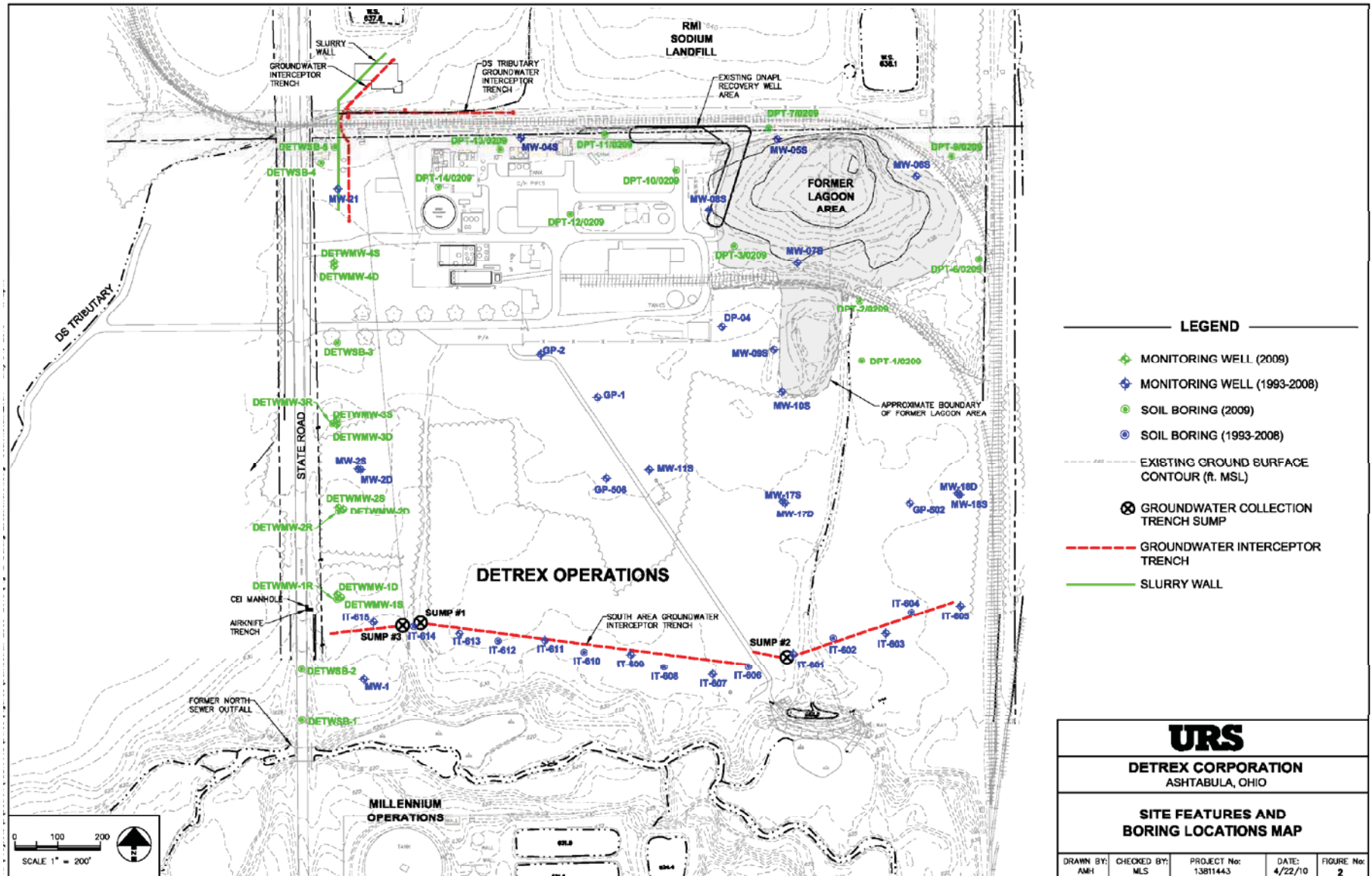


Figure 1 Site Features and Boring Location Map (after URS 2010)

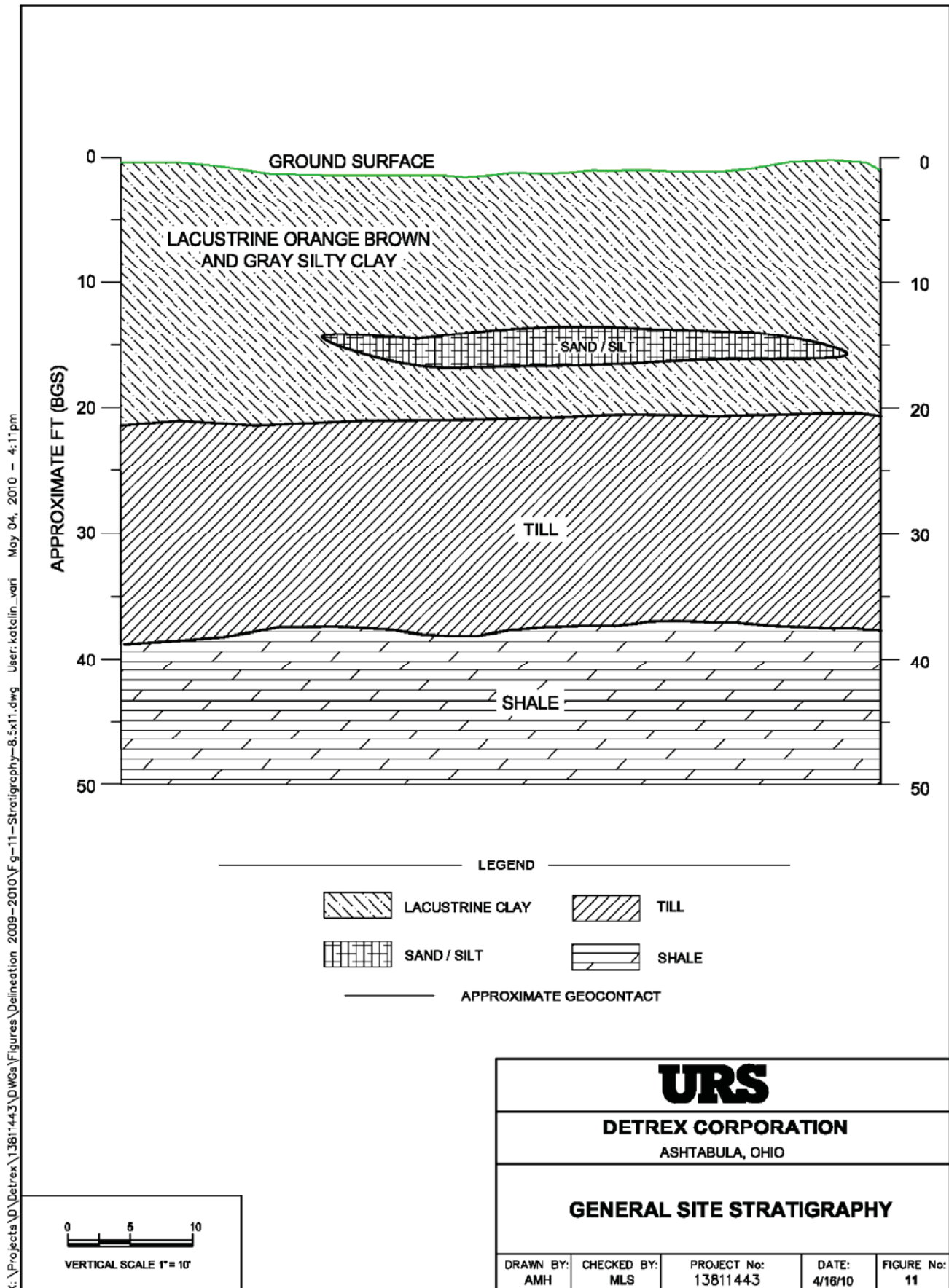


Figure 2 Site Geology (after URS 2010)

Project: - Detrex
 Project Location:
 Project Number: Detrex

Log of Boring IT0612

Sheet 1 of 1

Date(s) Drilled and Installed	Geologist J. Berk	Reviewer
Drilling Method Hollow Stem Auger	Drilling Contractor Northcoast Drilling	Total Depth of Borehole 18.00 ' bgs
Sampling Method	Drill Bit Size/Type: 3-1/4" ID HSA	Approximate Surface Elevation
Drill Rig Type: Truck-mounted CME	Groundwater Level(s)	Hammer Data 140# auto hammer
Boring Location:		

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Sampling Resistance Blows/6"	Recovery, inches	PID, OVA, ppm			
0			1					Medium stiff, light grayish brown, dry, silty CLAY, (GM) trace organics, non plastic, mottled, iron oxide staining, (slag)	Begin drilling @
2			3					Medium stiff, light grayish brown, moist, silty CLAY, (GM) trace silty sand, trace organics, low plasticity	
4			2					Medium stiff, light grayish brown, very moist, silty SAND, (SM) fine to medium grained	
6			3					Soft, light brown, wet, silty SAND, (SM) medium grained	
8			2					Soft, light grayish brown, very moist, silty SAND, (SM) fine to medium grained, mottled	
10			2					Medium stiff, light gray, moist, silty CLAY, (GM) trace rock fragments, low plasticity	← Detrex till pick
12			3					Medium stiff, light gray, moist, silty CLAY, (CL-ML) trace rock fragments, low plasticity, (till)	
14			3					Stiff, gray, moist, silty CLAY, (GC) trace rock fragments, low plasticity, (till)	
16			3					Stiff, gray, moist, silty CLAY, (GC) trace rock fragments, low plasticity, (till)	SSP&A - till not encountered
18								End of Boring at 18' bgs	End drilling @
20									
22									
24									
26									
28									
30									

Figure 3 Illustration of Difference Between SSPA and URS Interpretation of Till in Boring Logs - Boring IT-0612

ELEVATION TOP OF RISER PIPE: 638.59		LOCATION: Elken Metals DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750				DATE DRILLED: 14 July 1990 INSPECTOR: B. Schmidt			
GROUND ELEVATION: 636.1		DEPTH (Ft)	SAMPL NO.	TYPE	B/FT.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS	
		1	SS	12	1.7		Stiff, moist, brown and tan CLAY (CL)	Lacustrine OVA=BG	
		2	SS	10	2.0		...becomes less silty with depth	OVA=BG	
		5	3	SS	12	2.0			OVA=BG
		4	SS	14	2.0		Stiff, moist, bwn&tan CLAY; vertical fractures and iron staining	OVA=BG	
		5	SS	11	2.0		...Stiff, moist, gray CLAY (CL)	OVA=BG	
		10	6	SS	11	2.0		...12-inches with increased silt content	OVA=BG
		7	SS	9	2.0		Firm, moist, gray CLAY	OVA=BG	
		15	8	SS	8	1.8			OVA=BG
		9	SS	11	2.0		Stiff, moist, gray CLAY; with silt layers, some red staining	OVA=BG	
		10	SS	8	1.3		Firm, moist, gray CLAY; silt layers, trace gravel, some red staining	OVA=BG	
		20	11	SS	14	2.0		Stiff, moist, gray CLAY; silt layers, trace gravel, some red staining	OVA=BG
		12	SS	11	2.0		...iron nodule	OVA=BG	
		25	13	SS	14	1.8		...gravel increases, staining decreases	OVA=BG
		14	SS	8	2.0		Stiff, moist, gray CLAY; with coarse gravel, some red staining	OVA=BG Lacustrine	
		15	SS	14	2.0		Stiff, moist to dry gray Silty CLAY (CL-ML); with shale fragments, trace angular gravel	Till OVA=100	
		30	16	SS	27	2.0		Very stiff, moist to dry gray Silty CLAY; with shale fragments, trace angular gravel	OVA=400
		17	SS	29	1.0			OVA=360	
		35	18	SS	40	2.0		Hard, moist to dry gray Silty CLAY; with shale fragments, trace angular gravel increasing with depth	OVA=670
		19	SS	39	2.0			OVA=600	
		20	SS	37	2.0			OVA=1000	
		40	21	SS	25	2.0			
		22	SS	>120					
		45	23	NX	1.5			Gray SHALE (43.6 ft.)	Bedrock RQD=0%
		24	NX	5.0				Thin bedded, with some highly weathered beds	RQD=7% OVA=1000 RQD=0%
		50	25	NX	0.6				

LOG OF BORING FBW-16D

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL

DATE: 1 NOV 1990

PROJECT No.: 86C3609D-230

FIGURE No.: 24

Elevated
Blow Counts
in Till Unit

Figure 4 Example of Elevated Blow Counts at Till Unit, Boring FBW-16D

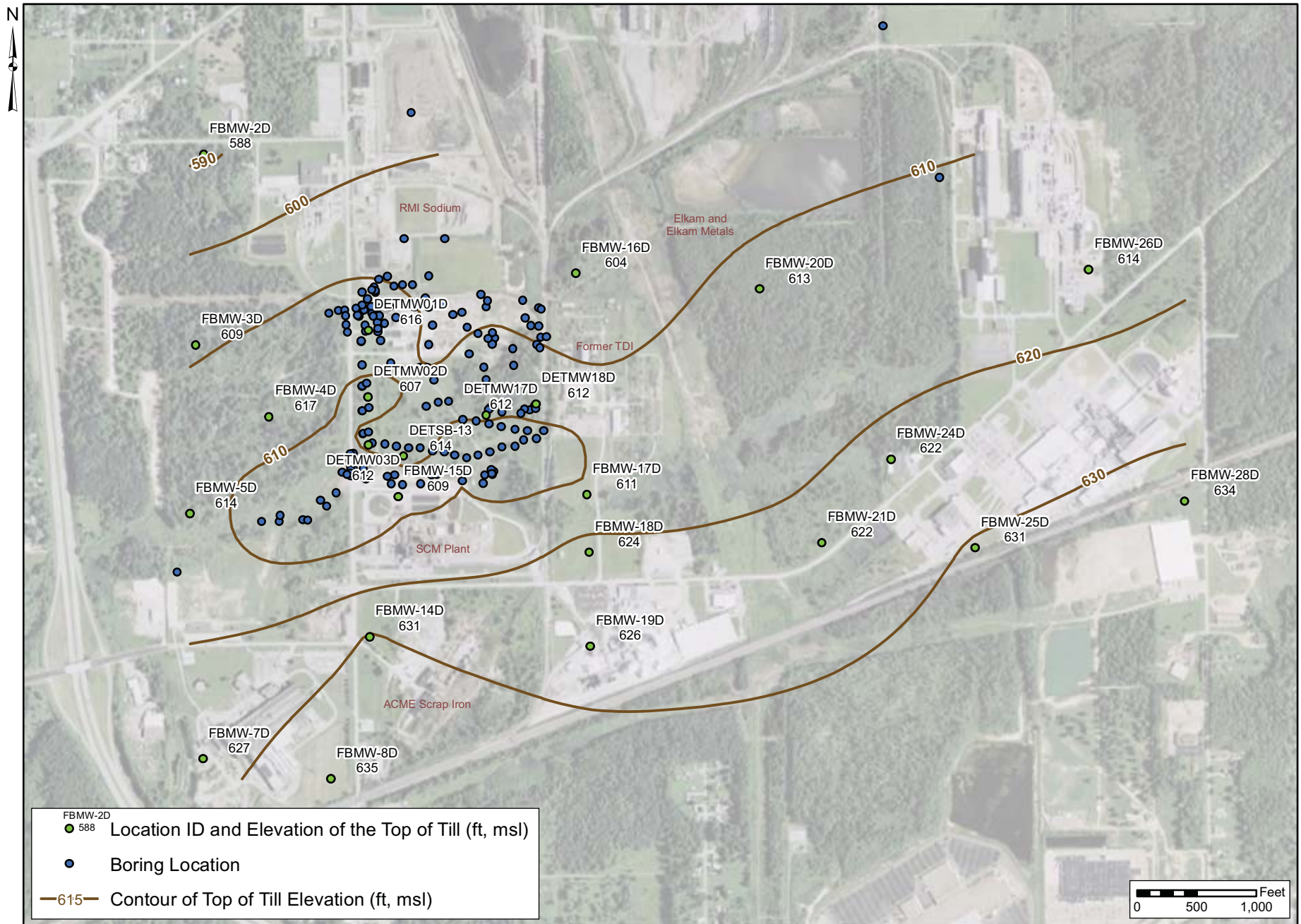


Figure 5 Regional Structure Contour Map of Compacted Till

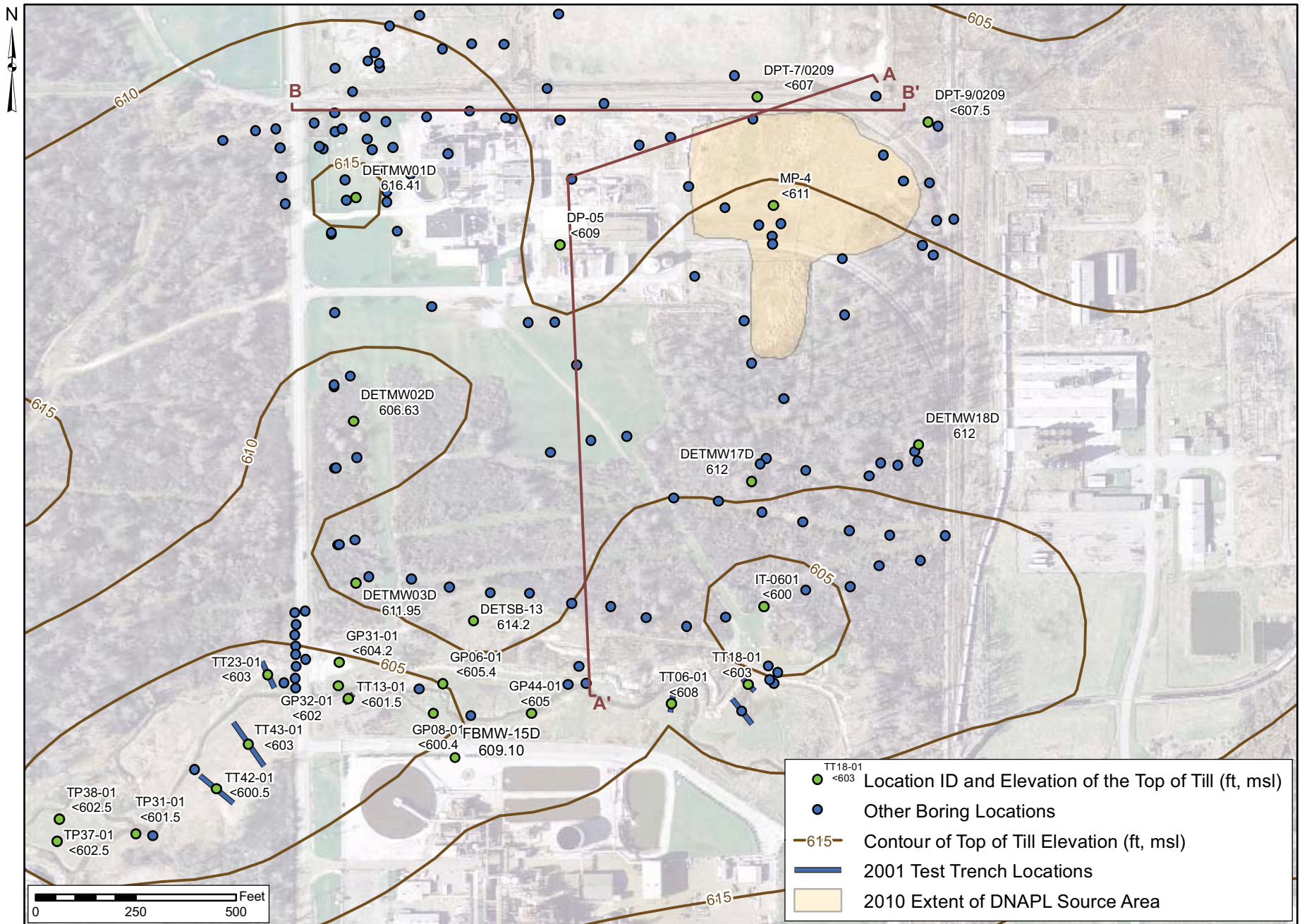


Figure 6 Site Structure Contour Map of Compacted Till

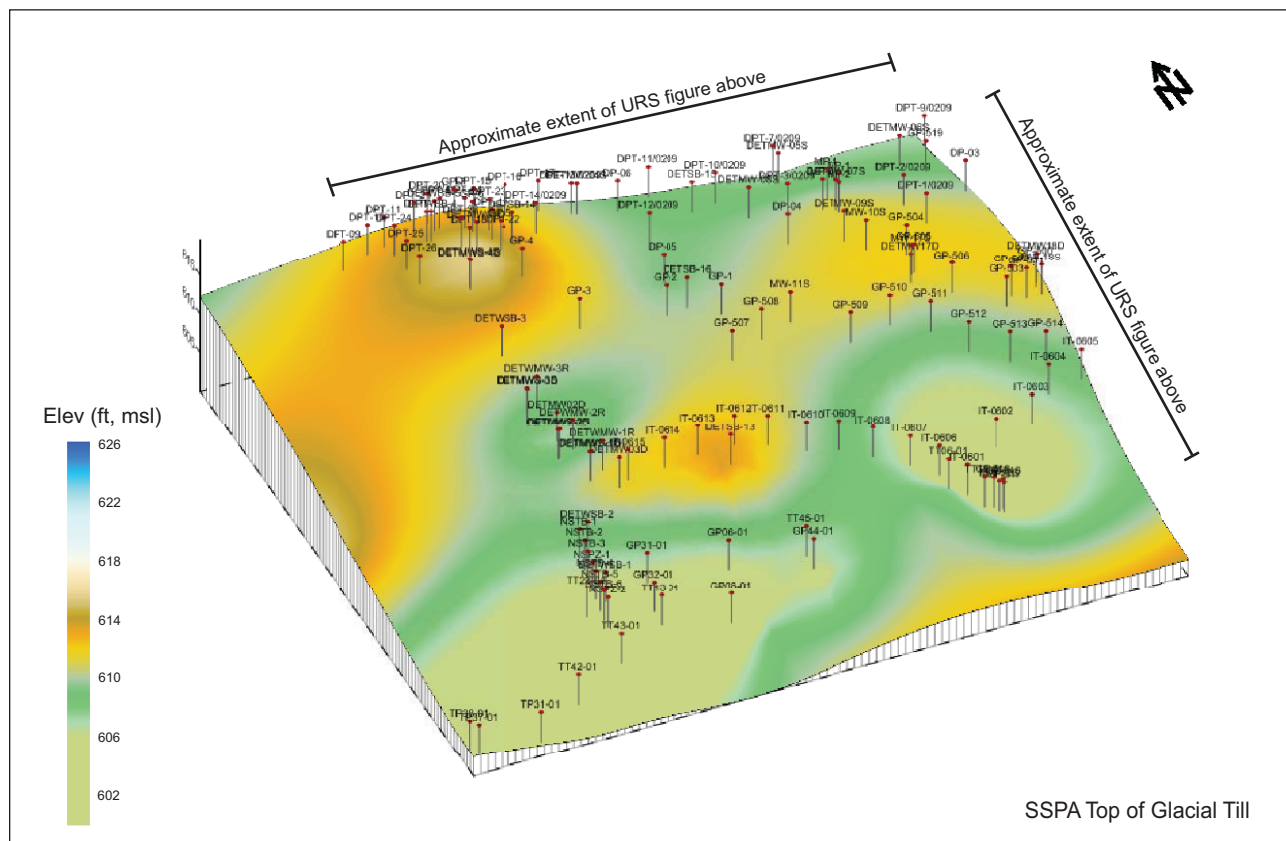
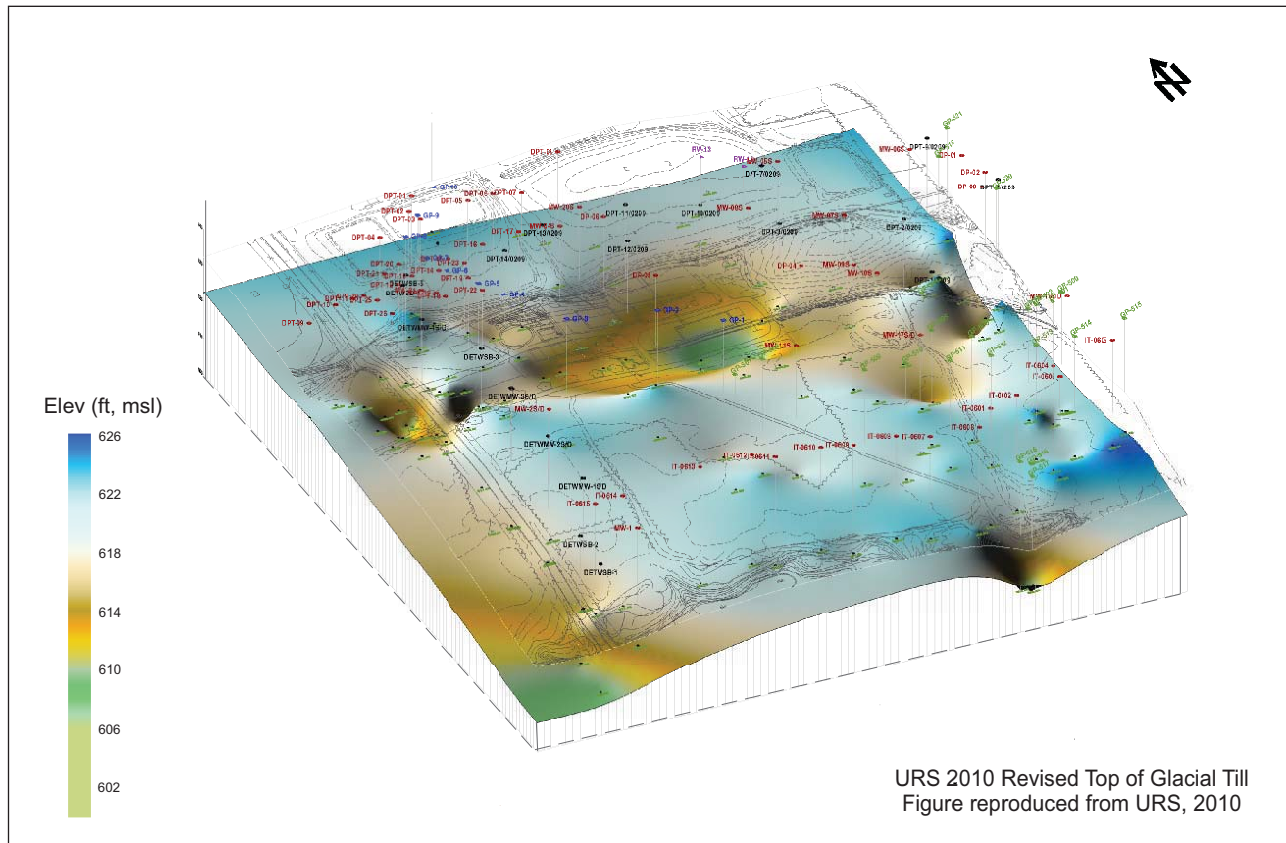


Figure 7 Comparison between SSP&A and URS (2010) Interpretations of Elevations of Top of Till

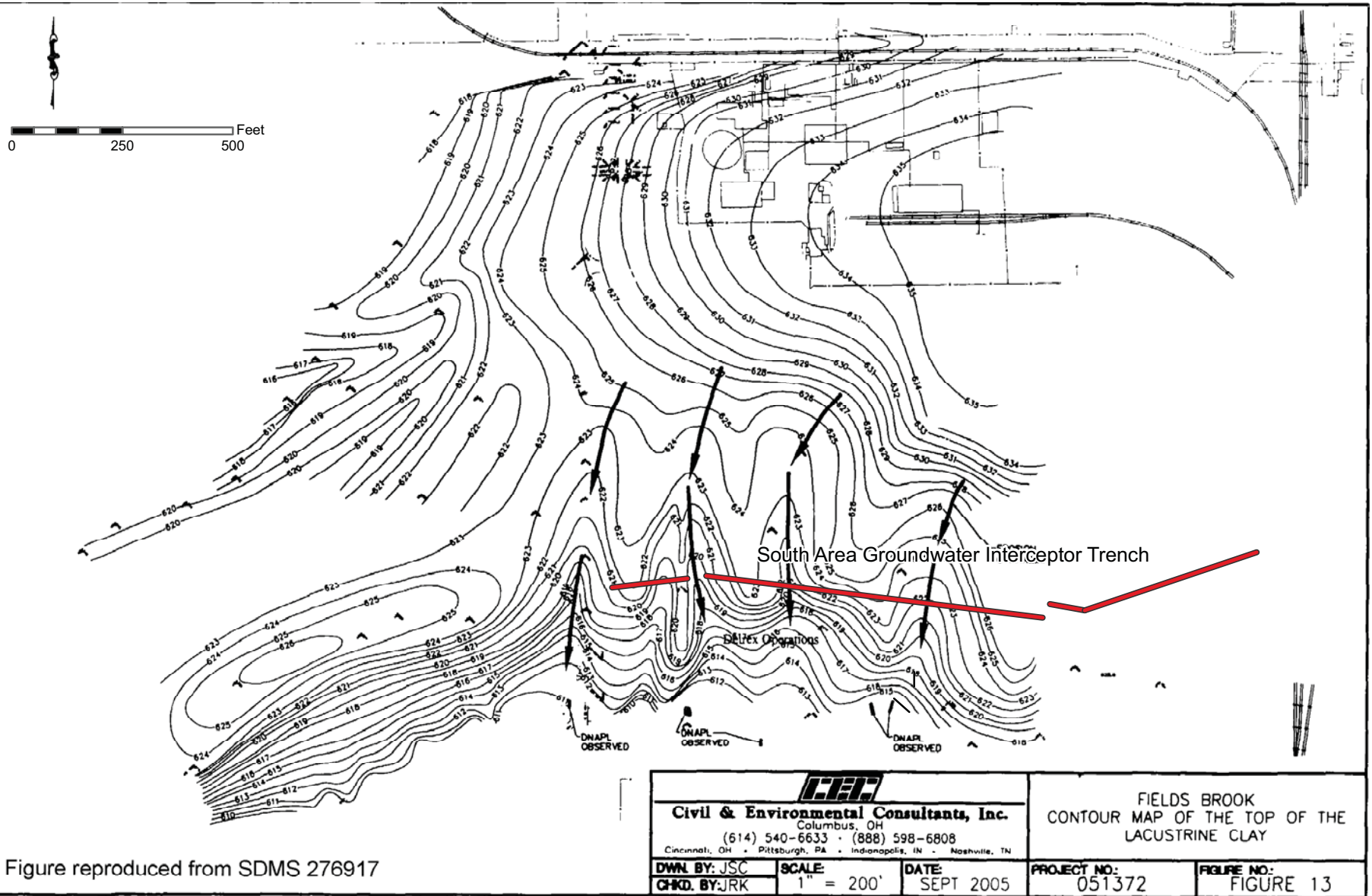


Figure reproduced from SDMS 276917

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Figure 8 FBAG's Interpretation of Top of Lacustrine Clay

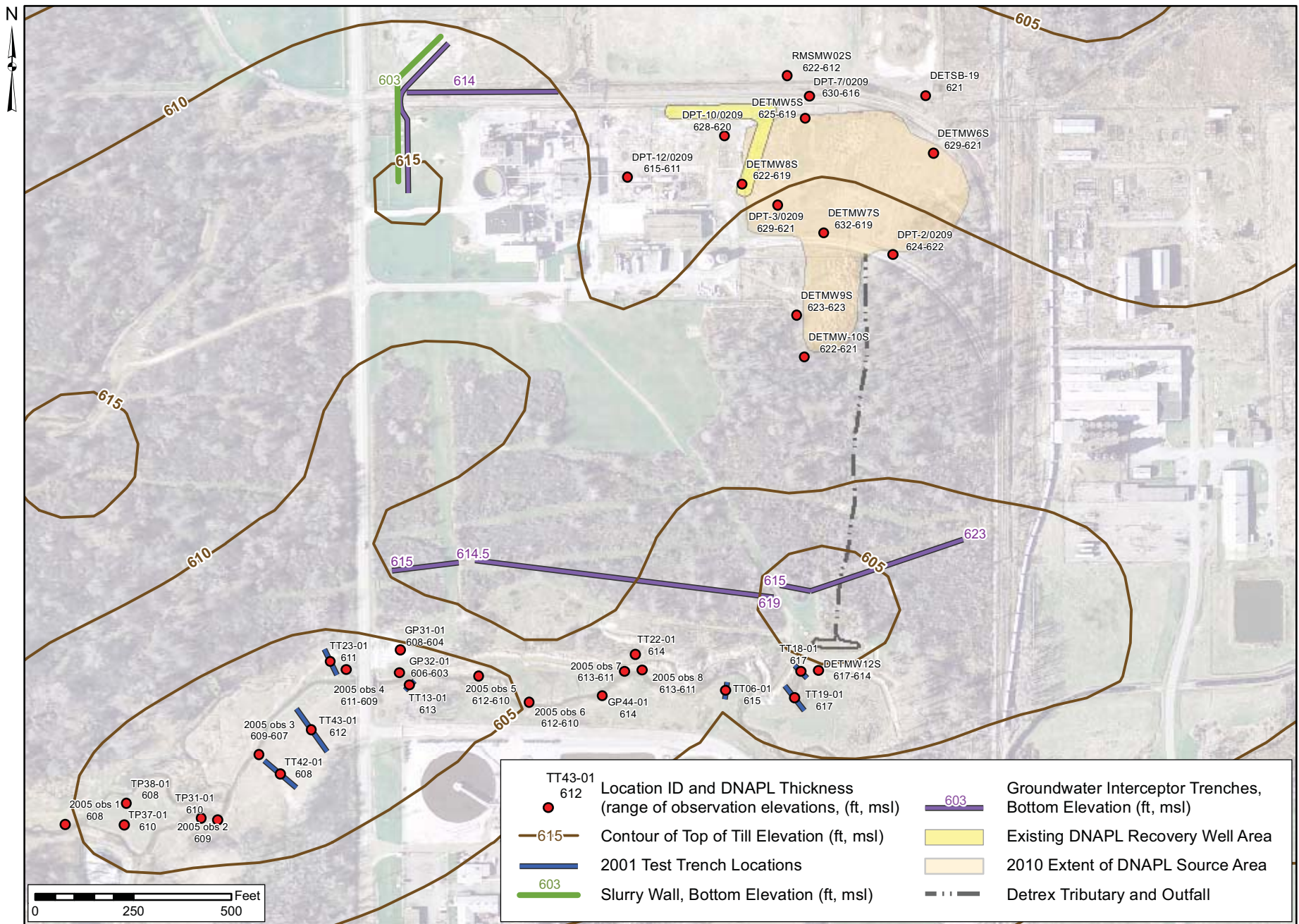


Figure 9 Map of Elevation of DNAPL Occurrences

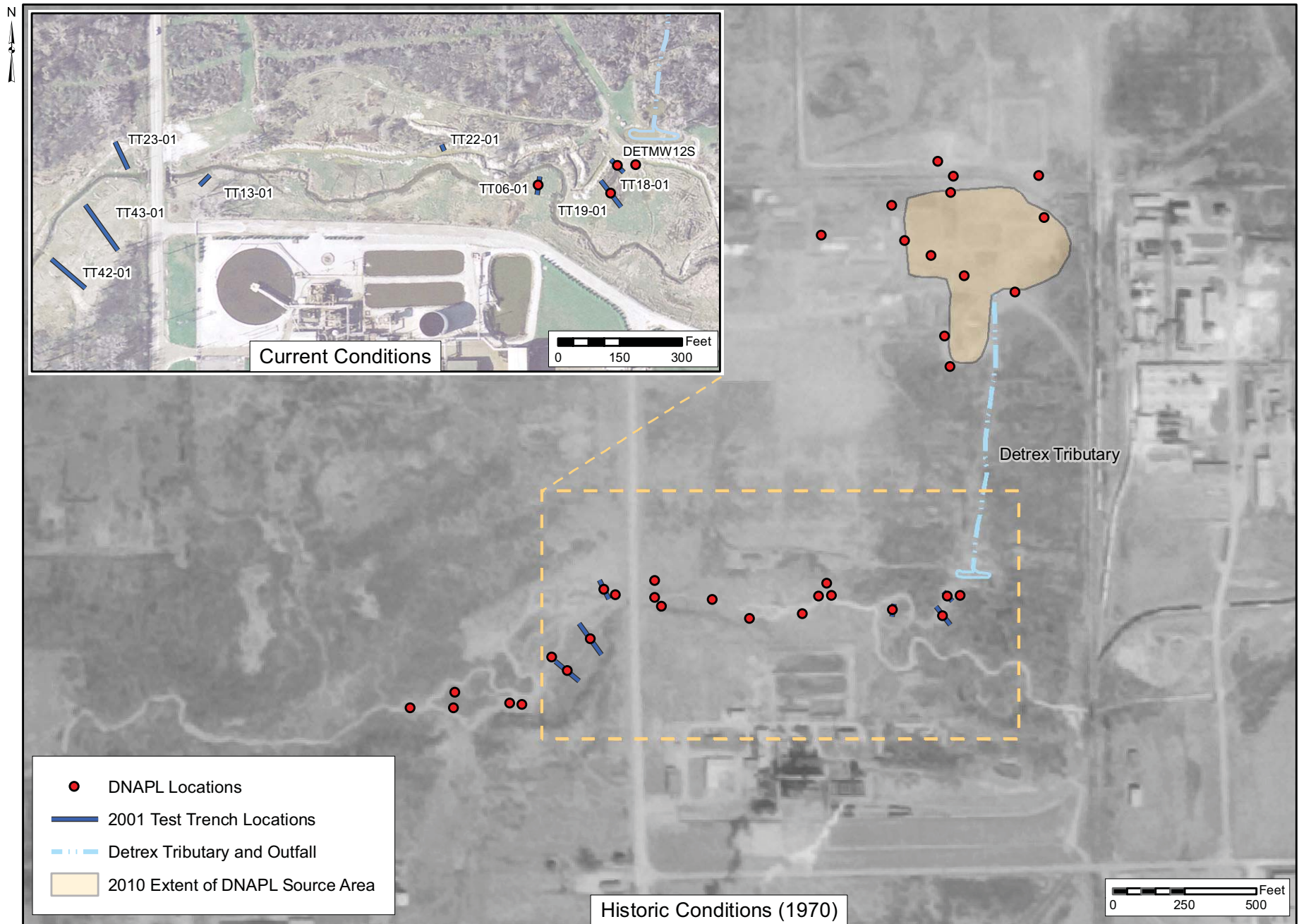


Figure 10 Historic and Current Conditions in the Vicinity of the Detrex Tributary Outfall

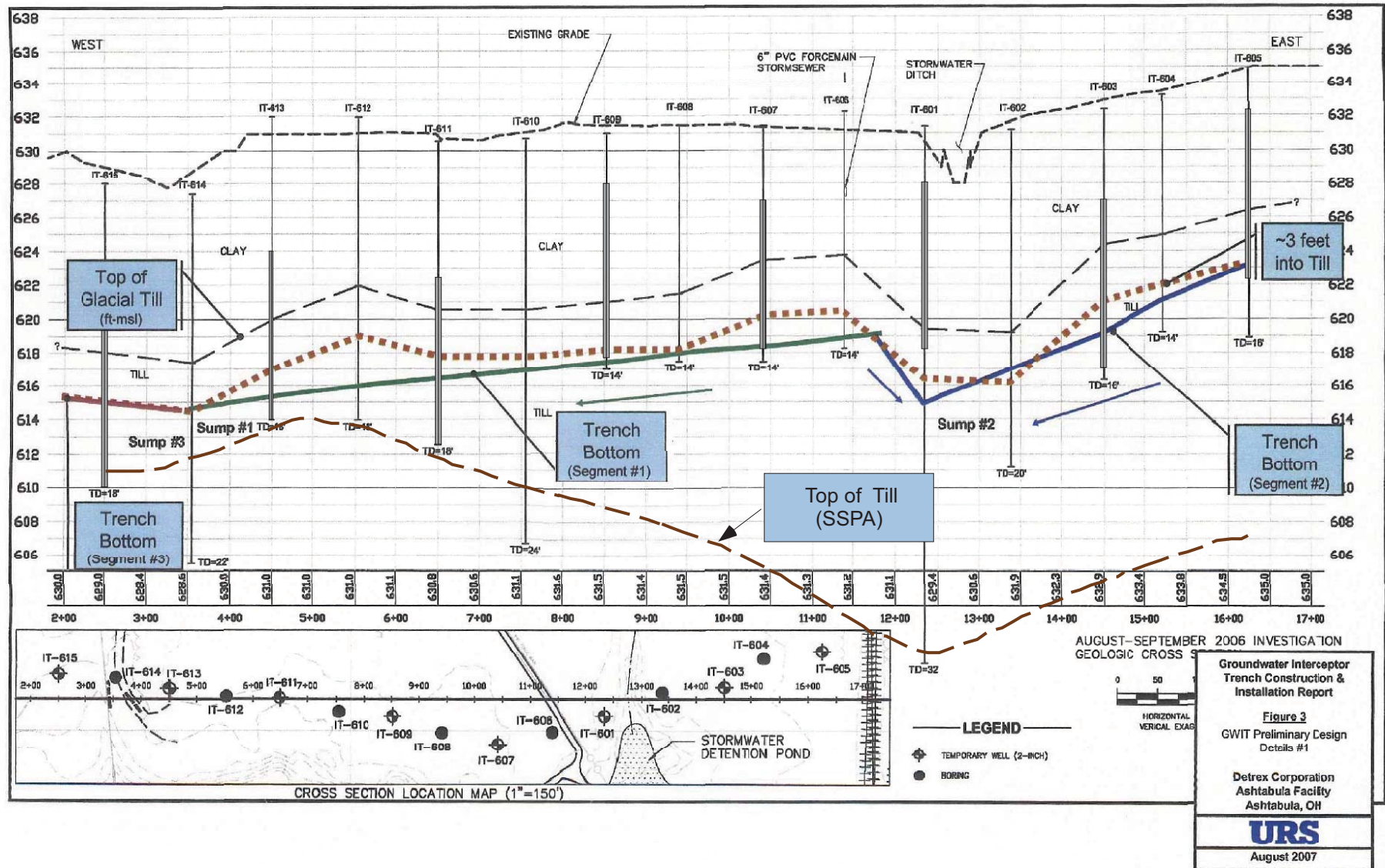
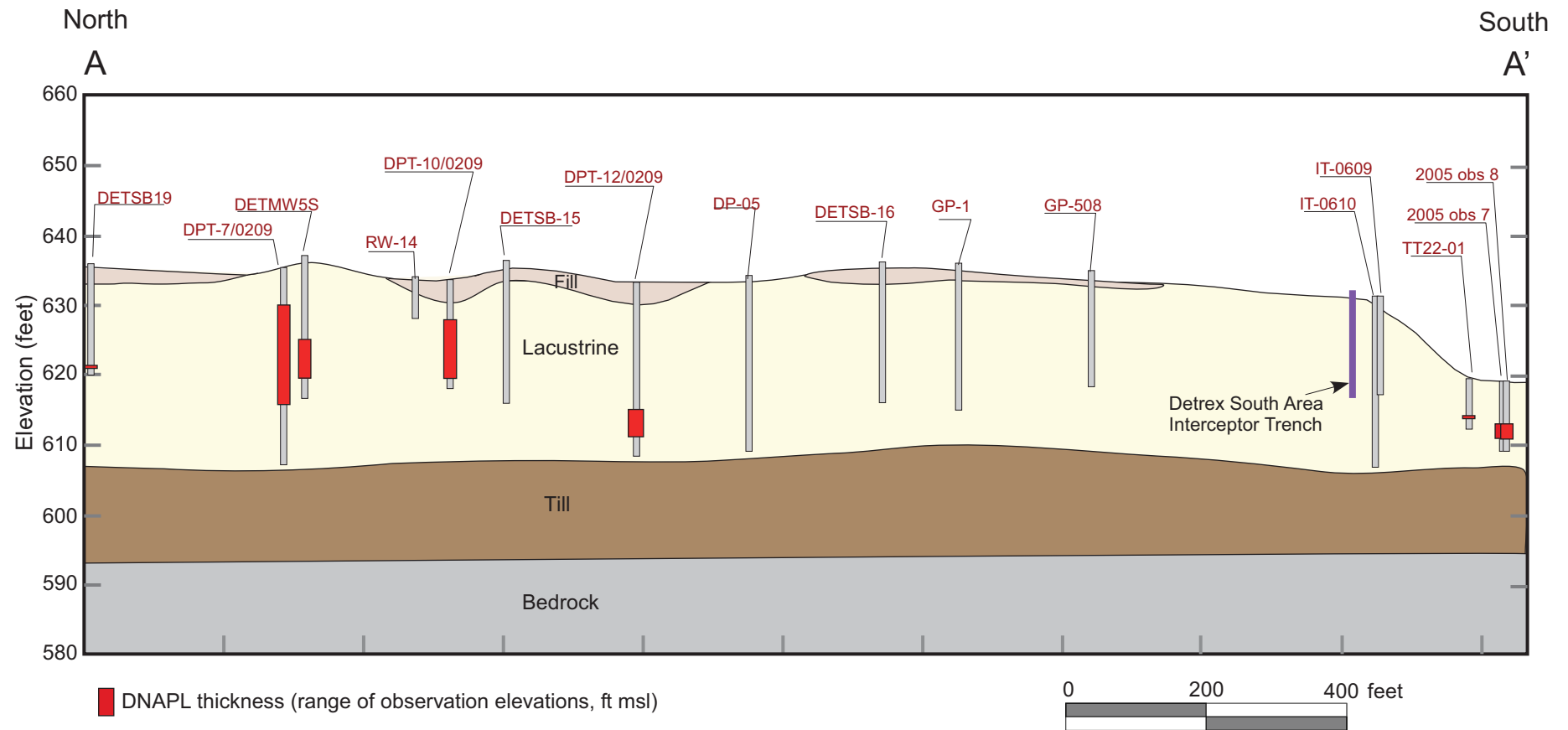


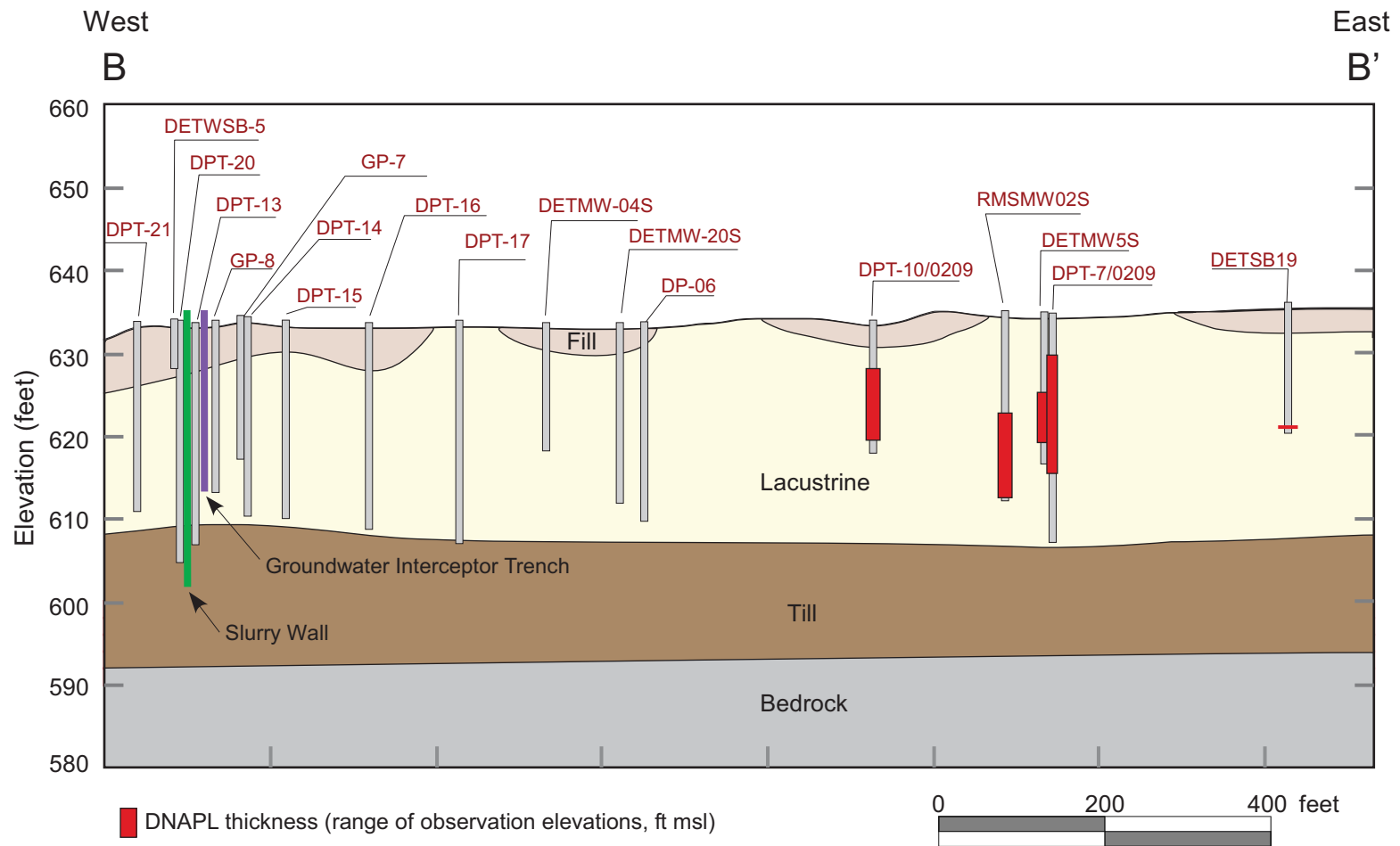
Figure 11 South Area Interceptor Trench Cross-Section (URS, 2007) showing SSP&A and URS Interpretations of Top of Till



Notes:

- 1- See Table 2 for details regarding DNAPL elevations. Elevations of 2005 DNAPL observations (2005 obs x) are approximate.
- 2- Borings are projected over a distance of 80 ft.

Figure 12 Geologic Cross-Section Showing Remedy Location with respect to DNAPL Contamination (North-South)



Notes:
 1- See Table 2 for details regarding DNAPL elevations.
 2- Borings are projected over a distance of 80 ft.

Figure 13 Geologic Cross-Section Showing Remedy Location with respect to DNAPL Contamination (East-West)

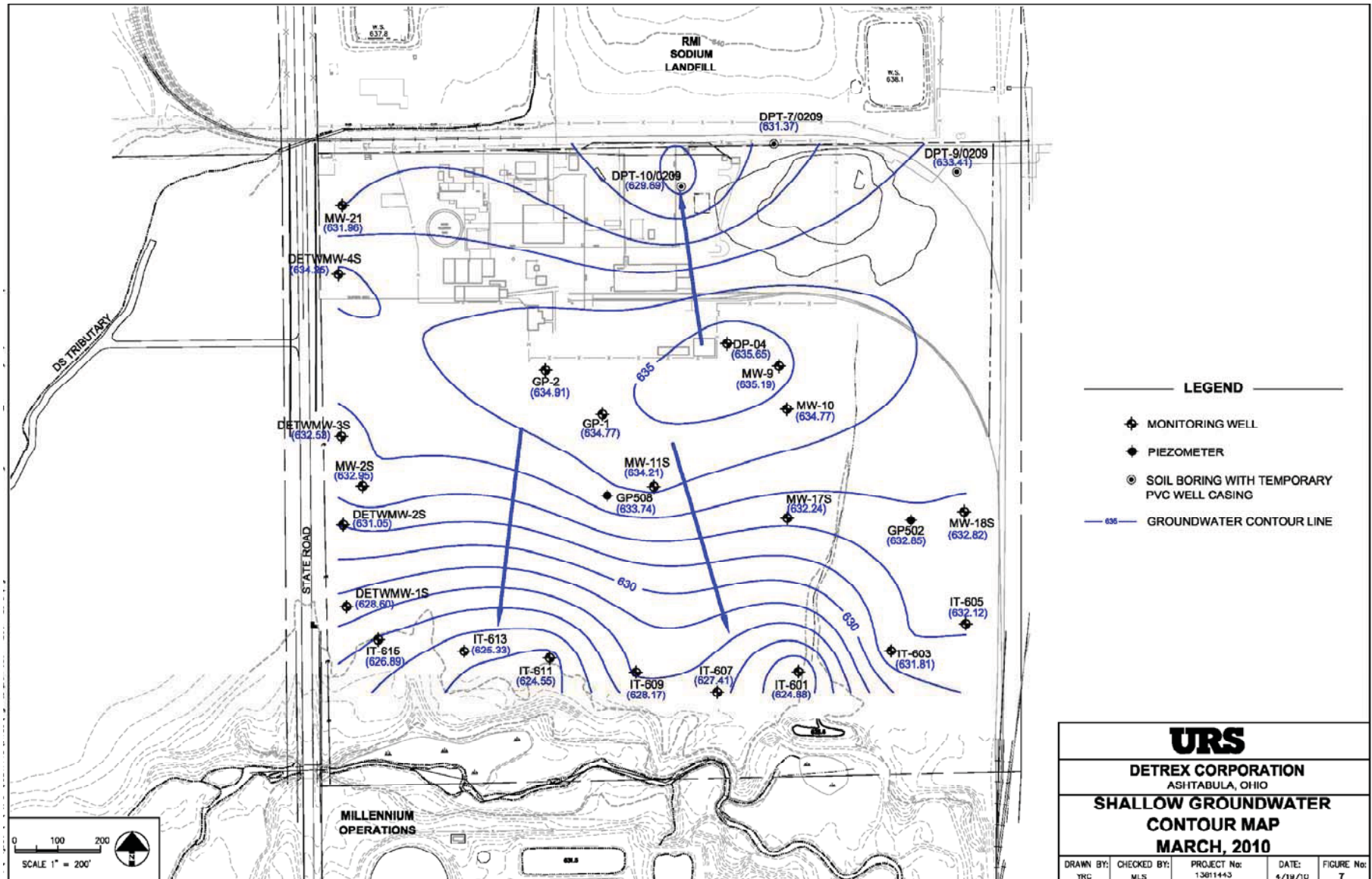


Figure 14 Shallow Groundwater Contour Map, March 2010 (after URS, 2010)

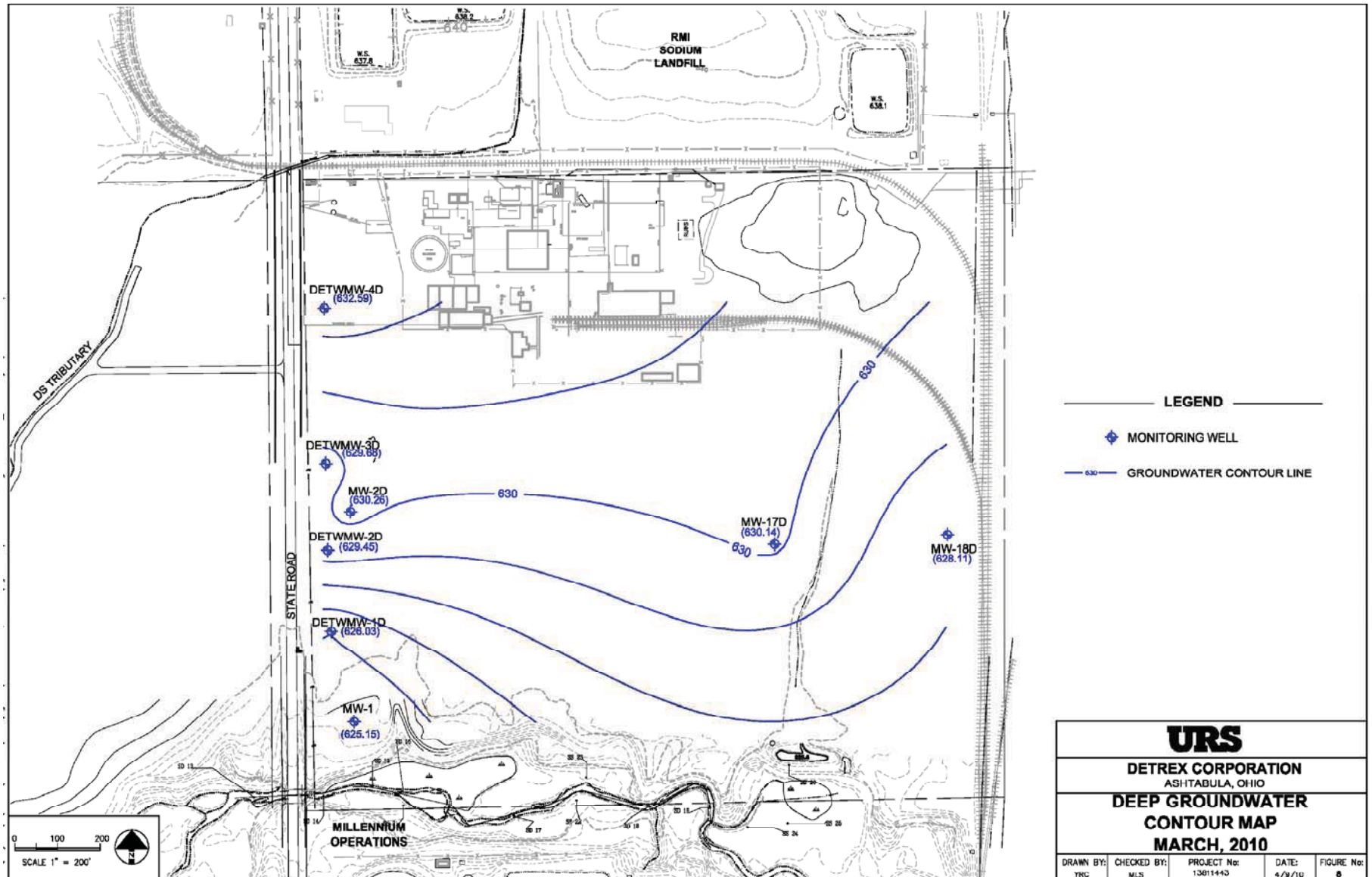


Figure 15 Deep Groundwater Contour Map, March 2010 (after URS, 2010)

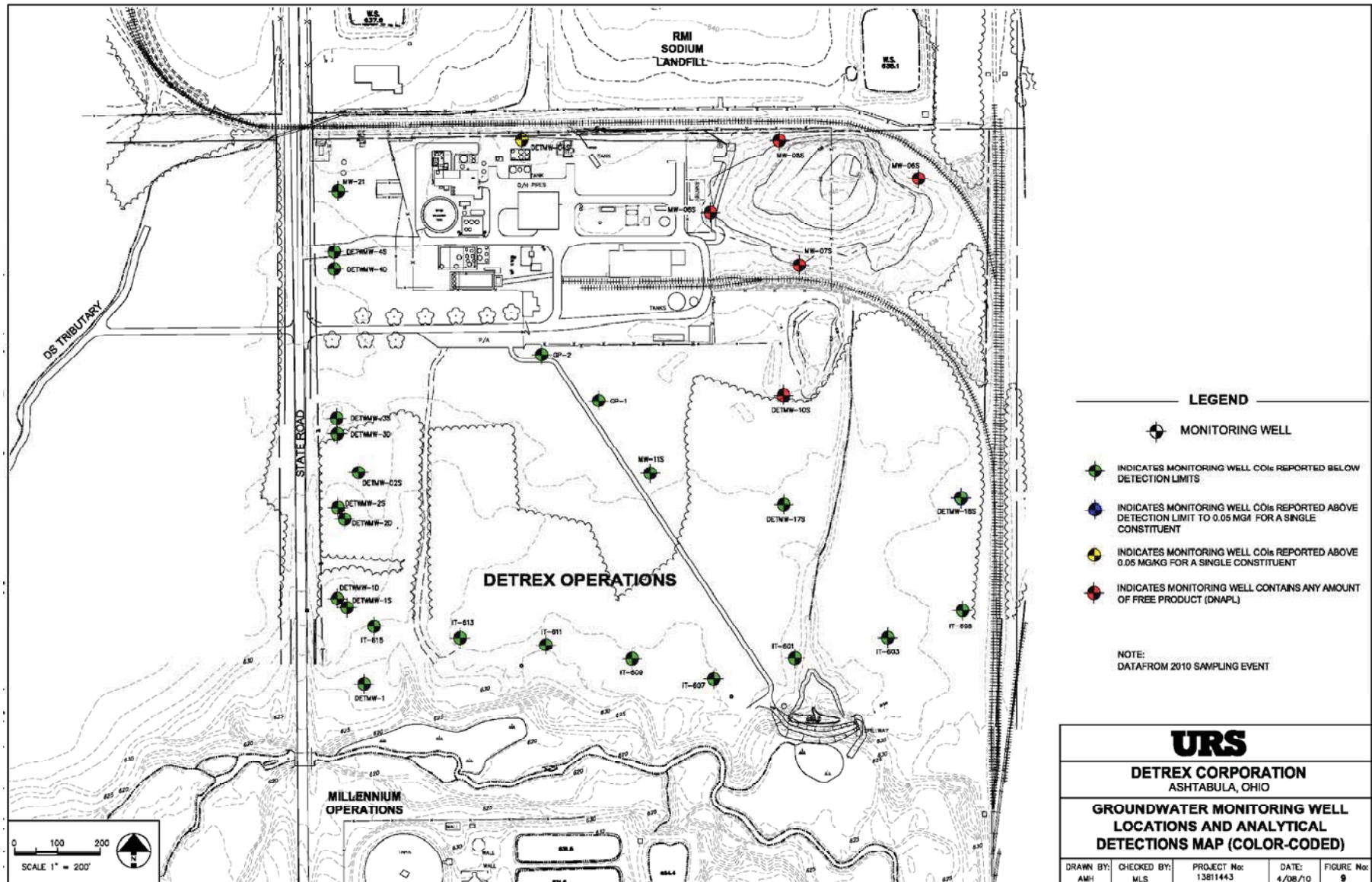


Figure 16 Groundwater Monitoring Well Locations and Analytical Detections Map (after URS, 2010)

TABLES

Table 1

Summary of SSPA Interpretations of Elevations of Compacted Till

Location ID	Easting (NAD_1927)	Northing (NAD_1927)	Ground Surface Elevation (feet, MSL)	Till Depth (feet, bgs)	Boring Depth (feet, bgs)	Bottom Boring Elevation (feet, MSL)	Till Elevation (feet, MSL)	Comment
DETMW-01D	2470441	817045	635.41	19	53.50	581.91	616	Hard, moist, gray with trace red mottling, Silty Clay. Trace sand and gravel. Hits bedrock (shale); same loc as FBMW11D
DETMW-02D	2470436	816486	633.63	27	50.30	583.33	607	very stiff, dry to moist gray Silty Clay; trace sand and coarse gravel. Hits bedrock (shale) Bedrock well; same as FBMW12D
DETMW-03D	2470442	816084	625.95	14	40.10	585.85	612	p.p increases from (.2-1.5) to ~5. Hard, moist gray silty clay; trace sand and f-m gravel. Hits bedrock (shale); same loc as FBMW13D
DETMW-04S	2470831	817241	633.00		15.00	618.00	< 609	no till
DETMW-05S	2471432	817240	636.50		20.00	616.50	< 617	no till
DETMW-06S	2471758	817151	636.25		17.50	618.75	< 618	no till
DETMW-07S	2471479	816948	635.50		20.00	615.50	< 617	no till
DETMW-08S	2471271	817072	636.25		20.00	616.25	< 619	no till
DETMW-09S	2471410	816738	634.50		17.50	617.00	< 616	no till
DETMW-10S	2471429	816632	634.50		17.50	617.00	< 617	no till
DETMW-11S	2471117	816449	634.00		20.00	614.00	< 614	no till
DETMW-12S	2471474	815843	622.20		12.00	610.20	< 610	possible till; hard clay tr c sand f angular gravel
DETMW-17D	2471429	816337	633.00	21	48.00	585.00	612	Boring extends to BR, but till pick not clear and picked at 21' based on nearby boring DETMW18D Top of bedrock at 36' = 597'; High PID w/in this till unit @ 22 to 25' BGS
DETMW-17S	2471451	816381	634.30		15.00	619.30	< 609	hard, moist, FID=100
DETMW-18D	2471846	816428	635.00	23	49.00	586.00	612	Bedrock well; very stiff, moist, gray clay with sand, trace gravel (becomes very stiff to hard at 612). Hits bedrock (shale) coord obtained by digitizing Feb17 1997 Woodward Clyde Fig. 5
DETMW-18S	2471843	816388	634.50		15.00	619.50	< 620	till possible
DETMW-20S	2470919	817316	632.00		20.00	612.00	< 612	didn't hit bedrock; till possible at 18.5 feet
DETMWS-1D	2470397	816178	630.21					no log
DETMWS-1S	2470400	816179	630.21					no log
DETMWS-2D	2470388	816369	632.05					no log
DETMWS-2S	2470392	816370	632.05					no log

Table 1

Summary of SSPA Interpretations of Elevations of Compacted Till

Location ID	Easting (NAD_1927)	Northing (NAD_1927)	Ground Surface Elevation (feet, MSL)	Till Depth (feet, bgs)	Boring Depth (feet, bgs)	Bottom Boring Elevation (feet, MSL)	Till Elevation (feet, MSL)	Comment
DETMWS-3D	2470387	816573	634.49					no log
DETMWS-3S	2470388	816577	634.49					no log
DETMWS-4D	2470381	816952	637.79					no log
DETMWS-4S	2470381	816957	638.22					no log
DETSB-13	2470735	815988	629.20	15	20.00	609.20	614	Hard, moist, gray Clay with f-c gravel. (underlying firm, moist to wet silty clay). FID decreases from ~1000 to ~0 at 614 ft. Doesn't hit bedrock. Till picked based on hard, clay, fc gravel no blow counts or pp though
DETSB-14	2470577	817104	634.00		20.00	614.00	< 614	no till
DETSB-15	2471149	817176	635.80		20.00	615.80	< 616	no till
DETSB-16	2470938	816735	636.01		20.00	616.01	< 616	no till
DETSB-19	2471739	817297	635.20		15.00	620.20	< 620	no till
DETMW-1R	2470440	816190	630.00		15.00	615.00	< 615	no till
DETMW-2R	2470443	816397	632.00		15.00	617.00	< 617	no till
DETMW-3R	2470427	816600	636.00		19.00	617.00	< 616	no till
DETWBS-1	2470317	815893	623.20			623.20	< 623	no log
DETWBS-2	2470316	816014	624.88			624.88	< 625	no log
DETWBS-3	2470389	816758	635.53			635.53	< 636	no log
DETWBS-4	2470361	817166	632.30			632.30	< 632	no log
DETWBS-5	2470390	817210	632.63			632.63	< 633	no log
DP-01	2471872	817081	635.50		24.00	611.50	< 612	low blow counts, wet, v stiff tr sand and silt
DP-02	2471891	816988	635.50		24.00	611.50	< 612	higher blow counts at 21', hard clay some silt f sand
DP-03	2471854	816926	635.50		24.00	611.50	< 612	low blow counts, stfff wet clay some silt and f sand
DP-04	2471287	816848	634.50		24.00	610.50	< 612	higher blow counts at 21' v stiff
DP-05	2470950	816927	633.00		24.00	609.00	< 609	low blow counts, till possible at ~22'
DP-06	2470950	817237	633.00		24.00	609.00	< 906	higher blow counts at 21', but wet
DPT-01	2470526	817473	636.70		12.00	624.70	< 625	m stiff, sity clay maybe till @9.5 ?
DPT-02	2470488	817406	636.70		16.00	620.70	< 621	till possible v stiff to hard, clay some rx frag low plasticity
DPT-03	2470501	817368	635.80		16.00	619.80	< 620	till possible m stiff clay some rx frag low plasticity homogeneous
DPT-04	2470389	817367	634.10		20.00	614.10	< 614	till possible at 18.5', m stiff moist silty clay
DPT-05	2470657	817416	635.20		16.00	619.20	< 619	possible till at 14.5 but moist, brown silty clay

Table 1

Summary of SSPA Interpretations of Elevations of Compacted Till

Location ID	Easting (NAD_1927)	Northing (NAD_1927)	Ground Surface Elevation (feet, MSL)	Till Depth (feet, bgs)	Boring Depth (feet, bgs)	Bottom Boring Elevation (feet, MSL)	Till Elevation (feet, MSL)	Comment
DPT-06	2470730	817428	634.80		20.00	614.80	< 615	possible till at 13' with increasing gravel
DPT-07	2470811	817427	632.80		16.00	616.80	< 617	no till, soft laminated
DPT-08	2470947	817502	637.00		16.00	621.00	< 621	no till
DPT-09	2470109	817187	626.70		14.00	612.70	< 613	no till, soft laminated
DPT-1/0209	2471661	816753	634.00		20.00	614.00	< 614	no till
DPT-10	2470192	817212	628.50		16.00	612.50	< 613	no till, soft laminated
DPT-10/0209	2471226	817195	633.00		15.00	618.00	< 618	no till
DPT-11	2470243	817216	628.20		13.00	615.20	< 615	no till, soft, silty
DPT-11/0209	2471060	817279	634.00		25.00	609.00	< 609	no till
DPT-12	2470350	817172	632.40		27.00	605.40	< 605	till possible, stiff silty clay, little rx frag tr gravel
DPT-12/0209	2470980	817091	633.00		25.00	608.00	< 608	no till
DPT-13	2470407	817216	630.80		24.00	606.80	< 607	till possible, m stiff tr rx frag
DPT-13/0209	2470815	817244	634.00		25.00	609.00	< 609	no till
DPT-14	2470470	817190	632.30		22.00	610.30	< 610	no till, v soft
DPT-14/0209	2470672	817154	635.00		25.00	610.00	< 610	no till
DPT-15	2470517	817234	631.80		22.00	609.80	< 610	loose silty sand
DPT-16	2470618	817246	632.80		24.00	608.80	< 609	no till, soft laminated
DPT-17	2470725	817260	633.00		26.00	607.00	< 607	till possible stiff silty clay tr rx frag
DPT-18	2470417	817038	634.40		22.00	612.40	< 612	till possible stiff silty clay rx frag some fc gravel
DPT-19	2470516	817113	632.97		28.00	604.97	< 605	till possible, stiff moist silty clay, tr fc gravel
DPT-2/0209	2471655	816892	634.00		25.00	609.00	< 609	no till
DPT-20	2470389	817255	632.70		28.00	604.70	< 605	no till, soft wet
DPT-21	2470338	817230	633.00		22.00	611.00	< 611	no till, v soft wet silt
DPT-22	2470519	817034	633.70		20.00	613.70	< 614	no till, soft silt layers
DPT-23	2470534	817170	634.00		18.00	616.00	< 616	till possible, but inconsistent w/ nearby borings; v stiff silty clay moist w/ sat. silt seam
DPT-24	2470252	817168	631.90		15.50	616.40	< 616	v stiff silt no till
DPT-25	2470256	817095	634.50		15.00	619.50	< 619	no till, soft
DPT-26	2470265	817029	633.80		16.00	617.80	< 618	no till, soft
DPT-28	2470415	817089	632.70		20.00	612.70	< 613	no till, soft
DPT-3/0209	2471362	817019	633.50		15.00	618.50	< 619	no till

Table 1

Summary of SSP&A Interpretations of Elevations of Compacted Till

Location ID	Easting (NAD_1927)	Northing (NAD_1927)	Ground Surface Elevation (feet, MSL)	Till Depth (feet, bgs)	Boring Depth (feet, bgs)	Bottom Boring Elevation (feet, MSL)	Till Elevation (feet, MSL)	Comment
DPT-6/0209	2471933	816991	635.00		25.00	610.00	< 610	no till
DPT-7/0209	2471442	817296	632.00		25.00	607.00	< 607	no till
DPT-9/0209	2471869	817233	632.50		25.00	607.50	< 608	stiff, moist gray silty clay with fine shale fragments and gravel. Trace sand. Doesn't hit bedrock. Value represents Max. till elevation
FBMW-10D	2471081	817814	637.4	?	64.35	573.05		Information in boring log is insufficient to pick till surface
FBMW-14D	2470452	814475	639.9	9	42.5	597.4	631	
FBMW-15D	2470689	815648	627.1	18	38.8	588.3	609	
FBMW-16D	2472183	817525	636.1	32	53	583.1	604	
FBMW-17D	2472275	815668	637.63	27	42.7	594.93	611	
FBMW-18D	2472293	815183	628.49	4	30	598.49	624	
FBMW-19D	2472301	814396	643.1	17	36.8	606.3	626	
FBMW-20D	2473723	817393	638.9	26	51	587.9	613	
FBMW-21D	2474248	815264	639.21	17	31.6	607.61	622	
FBMW-22D	2474760	819600	639.97	?	54	585.97		Information in boring log is insufficient to pick till surface
FBMW-23D	2475232	818329	641.53	?	47.5	594.03		Information in boring log is insufficient to pick till surface
FBMW-24D	2474827	815965	639.26	17	40	599.26	622	
FBMW-25D	2475533	815219	642.8	12	28.5	614.3	631	
FBMW-26D	2476485	817556	638.3	24	45	593.3	614	
FBMW-28D	2477293	815612	643.2	9	18.3	624.9	634	
FBMW-2D	2469059	818525	634.49	46	60.5	573.99	588	
FBMW-3D	2468992	816922	635.61	27	56	579.61	609	
FBMW-4D	2469608	816321	630.92	14	48.8	582.12	617	
FBMW-5D	2468944	815508	629.16	15	42.5	586.66	614	
FBMW-6D	2468837	815016	630.3	?	29.5	600.8		Information in boring log is insufficient to pick till surface
FBMW-7D	2469054	813448	637.85	11	33	604.85	627	
FBMW-8D	2470125	813283	644.38	9	35.4	608.98	635	
FBMW-9D	2470801	818872	641.30	?	76.65	564.65		Information in boring log is insufficient to pick till surface
GP06-01	2470659	815832	615.40		10.00	605.40	< 605	Doesn't hit till or bedrock. Represents max till elevation.
GP08-01	2470635	815758	615.40		15.00	600.40	< 600	Doesn't hit till or bedrock. Represents max till elevation.
GP-1	2470992	816627	635.00		20.00	615.00	< 615	no clear till contact
GP-10	2470601	817499	636.00		20.00	616.00	< 616	silt @ 18', not till

Table 1

Summary of SSP&A Interpretations of Elevations of Compacted Till

Location ID	Easting (NAD_1927)	Northing (NAD_1927)	Ground Surface Elevation (feet, MSL)	Till Depth (feet, bgs)	Boring Depth (feet, bgs)	Bottom Boring Elevation (feet, MSL)	Till Elevation (feet, MSL)	Comment
GP-11	2470740	817815	638.00		16.00	622.00	< 622	silty clay @ 14' maybe till
GP-2	2470872	816733	635.00		20.00	615.00	< 615	PP values and silt laminae not consistent with till; silty sand at BOB
GP-3	2470631	816773	637.00		20.00	617.00	< 617	pp values may indicate till, but wet
GP31-01	2470399	815885	624.2		20.00	604.20	< 604	Doesn't hit till or bedrock. Represents max till elevation.
GP32-01	2470398	815827	617.0		15.00	602.00	< 602	Doesn't hit till or bedrock. Represents max till elevation.
GP-4	2470545	816960	636.00		16.00	620.00	< 620	pp values may indicate till, but wet
GP44-01	2470879	815758	618.00		13.00	605.00	< 605	Doesn't hit till or bedrock. Represents max till elevation.
GP-5	2470519	817059	635.00		16.00	619.00	< 619	pp values not consistent w/ till, wet
GP-500	2471836	816411	634.45		12.00	622.45	< 622	till possible at 11.5' ?
GP-501	2471794	816377	634.00		15.00	619.00	< 619	silt layers present, but dry, hard, till possible
GP-502	2471751	816383	634.00		12.00	622.00	< 622	
GP-503	2471722	816350	634.00		12.00	622.00	< 622	till possible at 11.5
GP-504	2471509	816543	634.54		12.00	622.54	< 623	hard clay at 11.5'
GP-505	2471465	816395	633.29		12.00	621.29	< 621	till possible at 11.75'; based on dry, tr gravel;
GP-506	2471564	816364	630.55		12.00	618.55	< 619	soft moist silty clay not till
GP-507	2470927	816409	633.54		12.00	621.54	< 622	till possible at 11.75' ; hard dry clayey silt
GP-508	2471028	816440	634.00		16.00	618.00	< 618	no evidence for till; silty
GP-509	2471234	816296	633.24		12.00	621.24	< 621	soft, wet at 11', becomes hard at 11.5 (possibly till?)
GP-510	2471346	816288	632.66		16.00	616.66	< 617	soft wet silty clay at 12-16'
GP-511	2471454	816260	632.00		12.00	620.00	< 620	no evidence for till
GP-512	2471557	816235	632.37		12.00	620.37	< 620	hard, dry at 10', possibly till
GP-513	2471672	816214	633.72		12.00	621.72	< 622	wet silty sand at 11.5' not till
GP-514	2471774	816203	634.21		16.00	618.21	< 618	hard, but moist, possibly till
GP-515	2471912	816202	635.81		12.00	623.81	< 624	moist silty clay @11' maybe till but no hardness/stiff indicated
GP-516	2471494	815860	623.98		16.00	607.98	< 608	till possible at 15.5, v hard, dry tr grav
GP-517	2471485	815834	621.52		12.00	609.52	< 610	till possible, v hard, dry silty clay w/ fine gravel, becomes dry brittle w/ shale fragments; doesn't hit bedrock
GP-518	2471471	815876	624.00		16.00	608.00	< 608	till possible at 15'; v hard dry silty clay
GP-519	2471807	817085	636.69		12.00	624.69	< 625	till picked not present, but possible at 11.5' dry gray silty clay, not certain

Table 1

Summary of SSP&A Interpretations of Elevations of Compacted Till

Location ID	Easting (NAD_1927)	Northing (NAD_1927)	Ground Surface Elevation (feet, MSL)	Till Depth (feet, bgs)	Boring Depth (feet, bgs)	Bottom Boring Elevation (feet, MSL)	Till Elevation (feet, MSL)	Comment
GP-520	2471882	816901	635.76		12.00	623.76	< 624	till picked as not present but at 10' hard dry silty clay
GP-521	2471894	817223	635.42		12.00	623.42	< 623	maybe till @ 10' at silty clay but no hardness/stiff indicated
GP-6	2470482	817164	634.00		20.00	614.00	< 614	pp values not consistent w/ till, wet
GP-7	2470464	817245	633.00		16.00	617.00	< 617	silt laminae at 10' not consistent w/ till
GP-8	2470434	817309	637.00		24.00	613.00	< 613	silt laminae not consistent w/ till, PP too low also
GP-9	2470500	817379	638.00		20.00	618.00	< 618	silt laminae not consistent w/ till, PP too low also
IT-0601	2471459	816025	631.40		32.00	599.40	< 600	blow counts low but lith maybe indicate till, m stiff to soft
IT-0602	2471564	816066	631.20		20.00	611.20	< 611	maybe till, blow counts low but blow counts higher at >15"
IT-0603	2471675	816075	632.40		16.00	616.40	< 616	maybe till, but blow counts low
IT-0604	2471747	816126	633.20		14.00	619.20	< 619	maybe till but blow counts low until >10'
IT-0605	2471849	816139	634.90		16.00	618.90	< 619	maybe till, but blow counts low
IT-0606	2471364	815997	632.00		14.00	618.00	< 618	maybe till, but blow counts low
IT-0607	2471267	815976	631.00		14.00	617.00	< 617	maybe till, but blow counts low
IT-0608	2471166	815996	631.00		14.00	617.00	< 617	maybe till, but blow counts low
IT-0609	2471077	816025	631.00		14.00	617.00	< 617	maybe till, but blow counts low
IT-0610	2470979	816032	630.70		24.00	606.70	< 607	blow counts higher at about 22'; possible till at 22'
IT-0611	2470875	816057	630.60		18.00	612.60	< 613	maybe till, but blow counts low
IT-0612	2470778	816059	632.00		18.00	614.00	< 614	maybe till, but blow counts low
IT-0613	2470674	816073	632.00		18.00	614.00	< 614	maybe till, but blow counts low
IT-0614	2470579	816093	627.40		22.00	605.40	< 605	blow counts higher at about 18'; possible till
IT-0615	2470475	816099	628.00		18.00	610.00	< 610	maybe till, but blow counts low
MP-1	2471502	816979	635.00		22.00	613.00	< 613	gse approx based on TOC elev; all soft clay
MP-2	2471480	816929	635.00		22.00	613.00	< 613	gse approx based on TOC elev; blow counts higher at 21'
MP-3	2471447	816976	635.00		24.00	611.00	< 611	gse approx based on TOC elev; till uncertain due to wet, low blow counts, HNU reading; sand lense ?
MP-4	2471483	817025	635.00		24.00	611.00	< 611	gse approx based on TOC elev; not likely till based on wet, low blow counts, 10' silty sand at bottom
NSPZ-1	2470292	815926	623.00		16.00	607.00	< 607	gse from DEM; pick based on log pick, not much detail
NSPZ-2	2470292	815822	622.00		15.00	607.00	< 607	gse from DEM; pick based on log pick, not much detail

Table 1

Summary of SSP&A Interpretations of Elevations of Compacted Till

Location ID	Easting (NAD_1927)	Northing (NAD_1927)	Ground Surface Elevation (feet, MSL)	Till Depth (feet, bgs)	Boring Depth (feet, bgs)	Bottom Boring Elevation (feet, MSL)	Till Elevation (feet, MSL)	Comment
NSTB-1	2470290	816009	624.81		12.00	612.81	< 613	gse from DEM; pick based on log pick, not much detail
NSTB-2	2470293	815979	624.16		16.00	608.16	< 608	gse from DEM; pick based on log pick, not much detail
NSTB-3	2470290	815954	623.53		16.00	607.53	< 608	gse from DEM; pick based on log pick, not much detail
NSTB-4	2470292	815905	623.23		16.00	607.23	< 607	gse from DEM; pick based on log pick, not much detail
NSTB-5	2470293	815875	622.37		14.00	608.37	< 608	gse from DEM; pick based on log pick, not much detail
NSTB-6	2470291	815846	622.50		15.00	607.50	< 608	gse from DEM; pick based on log pick, not much detail
RMSMW02S	2471386	817348	637.33		25.00	612.33	<612	
RMSMW-05S	2470472	817385	635.60			635.60	< 615	no till
TP31-01	2469893	815457	613.8		4.5	609.3	< 603.5	Based on nearby boring GP19-01. Boring doesn't penetrate till or bedrock. Represents max till elevation.
TP37-01	2469696	815440	613.7		5.5	608.2	< 602.5	Based on nearby boring GP27-01. Boring doesn't penetrate till or bedrock. Represents max till elevation.
TP38-01	2469702	815495	612.7		7	605.7	< 602.5	Based on nearby boring GP27-01. Boring doesn't penetrate till or bedrock. Represents max till elevation.
TT06-01	2471229	815783	620.2		6	614.2	< 610	Based on nearby boring GP51-01. Boring doesn't penetrate till or bedrock. Represents max till elevation.
TT13-01	2470423	815796	617.2		6.5	610.7	<601.5	Based on nearby boring GP31-01. Boring doesn't penetrate till or bedrock. Represents max till elevation.
TT18-01	2471420	815830	620.9		6	614.9	< 606	Based on nearby boring GP54-01. Boring doesn't penetrate till or bedrock. Represents max till elevation.
TT23-01	2470222	815855	617.7		15	602.7	< 603	Based on nearby boring GP10-01. Boring doesn't penetrate till or bedrock. Represents max till elevation.
TT42-01	2470094	815570	615.3		7.5	607.8	<600.5	Based on nearby boring GP7-01. Boring doesn't penetrate till or bedrock. Represents max till elevation.
TT43-01	2470173	815682	616.1		5	611.1	< 603	Based on nearby boring GP16-01. Boring doesn't penetrate till or bedrock. Represents max till elevation.

Note: The till elevations in a bold font were used to make the top of till contours.

Table 2
Summary of DNAPL Occurrences in Detrex Borings and Excavations

Location ID	Easting (NAD_1927)	Northing (NAD_1927)	Ground Surface Elevation (feet, MSL)	Bottom elevation of Boring (feet, MSL)	Total Depth Drilled/ Excavated (feet, BGS)	Depth to Top DNAPL (feet, BGS)	Depth to Bottom DNAPL (feet, BGS)	Elevation of Top of DNAPL (feet, MSL)	Elevation of Bottom of DNAPL (feet, MSL)	Geologic Unit	Comments on DNAPL Observation	Data Source
2005 obs 1	2469546	815441	612.5	612.5		6	8	607	605	unknown	DNAPL 2005 observation described at 6-8' BGS; elevation is approximate	1
2005 obs 2	2469935	815453	613.5	613.5		6	8	608	606	unknown	DNAPL 2005 observation described at 6-8' BGS; elevation is approximate	1
2005 obs 3	2470040	815619	615.2	?	?	6	8	609	607	unknown	DNAPL 2005 observation described at 6-8' BGS; elevation is approximate	1
2005 obs 4	2470262	815835	617.0	?	?	6	8	611	609	unknown	DNAPL 2005 observation described at 6-8' BGS; elevation is approximate	1
2005 obs 5	2470599	815819	618.0	?	?	6	8	612	610	unknown	DNAPL 2005 observation described at 6-8' BGS; elevation is approximate	1
2005 obs 6	2470729	815753	618.3	?	?	6	8	612	610	unknown	DNAPL 2005 observation described at 6-8' BGS; elevation is approximate	1
2005 obs 7	2470971	815830	618.8	?	?	6	8	613	611	unknown	DNAPL 2005 observation described at 6-8' BGS; elevation is approximate	1
2005 obs 8	2471016	815834	619.0	?	?	6	8	613	611	unknown	DNAPL 2005 observation described at 6-8' BGS; elevation is approximate	1
DETMW-10S	2471429	816632	637.9	618.0	19.9	19	20	622	621	Lacustrine - clay/silt	DNAPL measured in well Jan 2010	2

Table 2

Summary of DNAPL Occurrences in Detrex Borings and Excavations

Location ID	Easting (NAD_1927)	Northing (NAD_1927)	Ground Surface Elevation (feet, MSL)	Bottom elevation of Boring (feet, MSL)	Total Depth Drilled/ Excavated (feet, BGS)	Depth to Top DNAPL (feet, BGS)	Depth to Bottom DNAPL (feet, BGS)	Elevation of Top of DNAPL (feet, MSL)	Elevation of Bottom of DNAPL (feet, MSL)	Geologic Unit	Comments on DNAPL Observation	Data Source
DETMW-12S	2471465	815833	623.0	611.0	12.0	6	9	617	614	Lacustrine - clay w/ silt	DNAPL at 6' to 9' in boring log	3
DETMW-05S	2471432	817240	637.0	617.0	20.0	14	20	625	619	Lacustrine - laminated clay/silt	DNAPL measured in well in 1997	4
DETMW-06S	2471758	817151	636.3	618.8	17.5	10	18	629	621	Lacustrine - laminated clay/silt	DNAPL noted at 9.9 feet in boring log; DNAPL measured in well in 1997 from 11 to 17.5 feet BGS	3
DETMW-07S	2471479	816948	636.5	616.5	20.0	7	20	632	619	Lacustrine - laminated silt/sand/clay	DNAPL measured in well in 1997	4
DETMW-08S	2471271	817072	636.4	616.4	20.0	17	20	622	619	Lacustrine - laminated clay/silt	DNAPL noted at 17.5' to 20' in boring log; DNAPL measured in well from 16.9' to 20' in 1997	3
DETMW-09S	2471410	816738	638.4	620.9	17.5	17	18	623	623	Lacustrine - laminated clay/silt/sand	DNAPL measured in well in 1997	4
DETSB-19	2471739	817297	635.2	620.2	15.0	14	14	621	621	Lacustrine - clay w/ silt	DNAPL at 14' in boring log	3
DPT-10/0209	2471226	817195	633.0	618.0	15.0	5	14	628	620	Lacustrine - silty clay	DNAPL noted between 5' and 13.5' in boring log	3
DPT-12/0209	2470980	817091	633.0	608.0	25.0	18	22	615	611	Lacustrine - sandy silt	18' to 22' a chemical odor and sheen is detected, with PID readings of >9999. A 3" layer of DNAPL is recorded at 21'.	3

Table 2

Summary of DNAPL Occurrences in Detrex Borings and Excavations

Location ID	Easting (NAD_1927)	Northing (NAD_1927)	Ground Surface Elevation (feet, MSL)	Bottom elevation of Boring (feet, MSL)	Total Depth Drilled/ Excavated (feet, BGS)	Depth to Top DNAPL (feet, BGS)	Depth to Bottom DNAPL (feet, BGS)	Elevation of Top of DNAPL (feet, MSL)	Elevation of Bottom of DNAPL (feet, MSL)	Geologic Unit	Comments on DNAPL Observation	Data Source
DPT-2/0209	2471655	816892	634.0	609.0	25.0	10	12	624	622	Lacustrine - silty sand	DNAPL at 10-12' in boring log	3
DPT-3/0209	2471362	817019	633.5	618.5	15.0	5	13	629	621	Lacustrine - silt, sand	DNAPL at 5'- 12.5' in boring log; 0.6' DNAPL measured in well March 2010	3
DPT-7/0209	2471442	817296	632.0	607.0	25.0	5	19	630	616	Lacustrine - silty sand to silty clay	DNAPL at 5'- 19' in boring log; 2.3' DNAPL measured in well bottom March 2010	3
GP31-01	2470399	815885	624.2	604.2	20.0	17	20	608	604	Lacustrine- clayey silt, sand	DNAPL observed in boring log	5
GP32-01	2470398	815827	617.0	602.0	15.0	11	15	606	603	Lacustrine- laminated clayey silt	DNAPL observed in boring log	5
GP44-01	2470914	815768	618.0	605.0	13.0	4	4.5	614	613.5	Lacustrine- silt	Soil concentrations are consistent with presence of DNAPL	7
RMSMW02S	2471386	817348	637.3	612.3	25.0	15	25	622	612	lacustrine- clayey silt with silt and fine sand laminations	10' of DNAPL observed in bottom of well	6
TP31-01	2469893	815457	613.8	609.3	4.5	4	4	610	610	Lacustrine- silt w/sand	DNAPL observed in test pit; approximate depth	7
TP37-01	2469696	815440	613.7	608.2	5.5	3.8	4	609.9	609.7	Lacustrine- silt	DNAPL observed in test pit; approximate depth	7
TP38-01	2469702	815495	612.7	605.7	7	4.8	5	607.9	607.7	Lacustrine- silt w/sand	DNAPL observed in test pit; approximate depth	7
TT06-01	2471229	815783	620.2	614.2	6.0	6	6	615	615	Lacustrine- silty clay	DNAPL in pockets and cracks	5
TT13-01	2470423	815796	617.2	610.7	6.5	4.5	4.5	613	613	Lacustrine- silt w/sand	DNAPL present on clay (4.5 ft)	5

Table 2

Summary of DNAPL Occurrences in Detrex Borings and Excavations

Location ID	Easting (NAD_1927)	Northing (NAD_1927)	Ground Surface Elevation (feet, MSL)	Bottom elevation of Boring (feet, MSL)	Total Depth Drilled/ Excavated (feet, BGS)	Depth to Top DNAPL (feet, BGS)	Depth to Bottom DNAPL (feet, BGS)	Elevation of Top of DNAPL (feet, MSL)	Elevation of Bottom of DNAPL (feet, MSL)	Geologic Unit	Comments on DNAPL Observation	Data Source
TT18-01	2471420	815830	620.9	614.9	6.0	4	4	617	617	Lacustrine- silt w/sand	DNAPL present on clay (4ft)	5
TT23-01	2470222	815855	617.7	602.7	15.0	7	7	611	611	Lacustrine- sandy silt	DNAPL present on clay (7ft)	5
TT42-01	2470094	815570	615.3	607.8	7.5	7	7	608	608	Lacustrine- silty clay, stratified w/ f. sand lenses	DNAPL pockets @ 7 ft	5
TT43-01	2470173	815682	616.1	611.1	5.0	4	4	612	612	Lacustrine- silt, sand	DNAPL, patchy @ 4 ft	5
TT22-01	2470998	815875	619.2	612.2	7.0	5	5	614	614	Lacustrine- silt	DNAPL present on clay (5 ft)	5
TT19-01	2471404	815763	620.9	615.4	5.5	4	4	617	617	Lacustrine- clay with silt	DNAPL pockets on clay (4 ft)	5

Data Sources:

- 1) 2005 DNAPL observations from Gradient Corporation, 2006
- 2) URS, 2010 (Table 2)
- 3) Boring Log
- 4) Document SDMS 91844, page 23 Table 1
- 5) Boring logs from Doc 369208 also shown in Gradient Corp 2006 Figures 2-8
- 6) Eckenfelder, 1990
- 7) Conestoga-Rovers & Associates, 2003

Appendix A

BORING LOGS

Project: Detrex Delineation
 Project Location: 1100 State Road, Ashtabula, OH
 Project Number: 13811443.09402













Key to Log of Boring

Elevation, feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	Well Details	FIELD NOTES AND WELL DETAILS
		Type	Number	Headspace, ppm	Recovery, inches					
1	2	3	4	5	6	7		8	9	10


COLUMN DESCRIPTIONS

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 Elevation: Elevation in feet referenced to mean sea level (MSL) or site datum.</p> <p>2 Depth: Depth in feet below the ground surface.</p> <p>3 Sample Type: Type of soil sample collected at depth interval shown; sampler symbols are explained below.</p> <p>4 Sample Number: Sample identification number.</p> <p>5 Headspace, ppm: MiniRae 11.7eV Photo-Ionization Detector (PID) reading in headspace of sealable plastic bag after several minutes of vapor accumulation.</p> <p>6 Recovery: Amount of material recovered in sampler, expressed as percentage of sampled interval; NA indicates data not available.</p> | <p>8 Graphic Log: Graphic depiction of subsurface material encountered; typical symbols are explained below.</p> <p>9 Material Description: Description of material encountered; may include color, moisture, grain size, and density/consistency.</p> <p>10 Well Details: Schematic of piezometer or well installation; materials are listed alongside well schematic; graphic symbols are explained below.</p> <p>11 Field Notes and Well Details: Comments regarding drilling or sampling made by driller or field personnel. Details about well construction materials and depths placed.</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

TYPICAL SOIL GRAPHIC SYMBOLS

 ASPHALT	 GRASS / TOPSOIL	 GRAVEL	 SAND
 Silty SAND	 Sandy CLAY	 Sandy SILT	 SILT
 Clayey SILT	 Sandy CLAY	 Silty CLAY	 Lean CLAY




TYPICAL WELL GRAPHIC SYMBOLS

 Riser in filter sand	 0.010-inch slotted screen in filter sand
----------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------

TYPICAL SAMPLER GRAPHIC SYMBOLS

 Hand Auger	 Geoprobe Macrocore Sampler
 Sample submitted for laboratory analysis	

OTHER GRAPHIC SYMBOLS

-  First water encountered at time of drilling and sampling (ATD)
-  Static water level measured using electronic water level indicator
-  Minor change in material properties within a lithologic stratum

GENERAL NOTES

- Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive; actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
- Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

Project Number: 13811443.09402

Sheet 1 of 1

Date(s) Drilled	11/23/09	Logged By	A. Heitger	Checked By	M. Koss
Drilling Method	Direct Push	Drill Bit Size/Type	2.25" OD Macrocore Sampler	Total Depth of Borehole	15.0 feet
Drill Rig Type	Geoprobe 7720 DT	Drilling Contractor	Stock Drilling	Surface Elevation	
Groundwater Level and Date Measured	Approximately 7.5' bgs ATD	Sampler Types	5' Macrocore Sampler	Boring Completion	Bentonite chips and cuttings
Coordinate Location		Boring Location			

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm			
0							GRASS / TOPSOIL	
			DP-1	50	N/A		Soft, moist, orange brown and gray mottled, sandy silty CLAY (CL-ML) with trace gravel and organics ↓ becomes medium stiff	
	5		DP-2	60	N/A		↓ becomes brown and gray mottled, without sand and with coarse gravel	
							Medium dense, wet, brown, sandy SILT (ML)	
							↓ becomes gray	
	10		DP-3	60	N/A		Medium stiff, moist, gray, silty CLAY (CL-ML) trace fine sand, trace fine gray shale fragments	
					0.0			
					N/A		Stiff, moist, gray, silty CLAY (CL-ML) with black shale fragments and fine sand (TILL)	Re-Sample from 12.0 to 14.0 feet bgs submitted for laboratory analysis.
15							End of Boring at 15' bgs	
20								

Project: Detrex Delineation

Project Location: 1100 State Road, Ashtabula, OH

Project Number: 13811443.09402

Log of Boring DETWMW-3R

Sheet 1 of 1

Date(s) Drilled	11/23/09	Logged By	A. Heitger	Checked By	M. Koss
Drilling Method	Direct Push	Drill Bit Size/Type	2.25" OD Macrocore Sampler	Total Depth of Borehole	19.0 feet
Drill Rig Type	Geoprobe 7720 DT	Drilling Contractor	Stock Drilling	Surface Elevation	
Groundwater Level and Date Measured	Approximately 12.0' bgs ATD	Sampler Types	5' Macrocore Sampler	Boring Completion	Bentonite chips and cuttings
Coordinate Location		Boring Location			

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm			
0							GRASS / TOPSOIL	
							Soft, moist, dark brown, sandy CLAY (CL) with gravel	
							Soft, moist, orange brown and gray, lean CLAY (CL) trace organics	
							becomes medium stiff	
		DP-1	58	N/A				
5							Medium stiff, moist, brown, silty CLAY (CL-ML)	
							becomes brown and gray mottled	
		DP-2	60	N/A				
10							Medium stiff, moist, gray, lean CLAY (CL) trace fine sand and fine rock fragments	
					N/A			
		DP-3	60	0.0			Medium dense, wet, brown, sandy SILT (ML)	
							becomes gray	
					N/A		Stiff, moist, gray, lean CLAY (CL) with silt varves, trace fine sand, trace fine gray shale fragments	
15								
					N/A			
		DP-4	48	0.0				
					N/A			
20							End of Boring at 19' bgs	Re-Sample from 16.0 to 18.0 feet bgs submitted for laboratory analysis.
								no fill
								< fill

Report: GEOPROBE_5FT_LINER_SB; File: DETREX DELINEATION_DPT1-DPT14.GPJ; 1/13/2010 DETWMW-3R

URS

Equivalent to DETMW-01D

ELEVATION TOP OF RISER PIPE: 637.91 ft.		LOCATION: Detrex DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750				DATE DRILLED: 22, 23 May 1990 INSPECTOR: N. Bigman		
GROUND ELEVATION: 635.41		DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
		1	CS			3.8	Stiff, moist, dark gray with brown mottling, Silty CLAY (CL); trace to few sand and gravel	Lacustrine
							Very stiff, dry to moist, light gray and brown mottled CLAY (CL); trace sand	
	5	2	CS			5.0	Hard, dry to moist, light gray and brown mottled CLAY; trace sand and gravel	
	10	3	CS			5.0	Hard, dry to moist, light brown CLAY; trace sand and gravel Hard, dry to moist, gray CLAY; trace coarse sand and fine gravel	Lacustrine Till
	15	4	CS			5.0	Dry to moist varves of fine gray Silty SAND (SM) and gray SILT (ML) Very stiff, dry to moist, gray CLAY (CL); some fine sand partings	
	20	5	CS			5.0	Hard, moist, gray with trace red mottling, Silty CLAY (CL-ML); trace sand and gravel	
	25	6	CS			5.0	...dark gray, coarse, angular, shale gravel	OVA = 90 ppm OVA = 390 ppm
	30	7	CS			5.0	Hard, moist, gray Silty CLAY; few gravel ...1-inch gray, medium sand layer	
35	8	CS			5.0	Hard, moist to dry, gray Silty CLAY; few gravel		
40	9	CS			5.0			

LOG OF BORING FBMW-11D
FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 14
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Water @ 9'

Water @ 14'

19' Till

Woodward-Clyde Consultants

Equivalent to DETMW-01D

Page 2 of 2

DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
					Hard, dry to moist gray Silty CLAY (CL-ML); few gravel	
45	10	CS		5.0		Till
					Gray SHALE (45.2 ft.) Slightly weathered, thin bedded, moderately hard, fractured	Bedrock RQD = 53%
50	11	CS		4.5	Unweathered to slightly weathered, thin bedded moderately hard, fractured, gray SHALE	RQD = 74%
55					End of boring at 53.5 feet. Water found in sampler at 9 and 14 feet.	
60						
65						
70						
75						
80						
85						

LOG OF BORING FBW-11D
FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL DATE: 1 NOV 1990 PROJECT No.: 86C3609D-230 FIGURE No.: 14

Woodward-Clyde Consultants

Equivalent to DETMW-02D

ELEVATION TOP OF RIGER PIPE: 636.53 ft.		LOCATION: Detrex DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750				DATE DRILLED: 5,6 June 1990 INSPECTOR: S. Basham, N. Bigman		
GROUND ELEVATION: 633.63		DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
		—	1	CS	—	4.0	Very soft, moist, brn CLAY (CL); roots, trace sand	Lacustrine
		—	—	—	4.5	Hard, moist, gray and brown mottled CLAY (CL); trace sand ...becomes hard, moist to dry, brown with gray mottling		
		5	2	CS	3.0	4.8	Very stiff, dry to moist, brown with gray mottling Silty CLAY (CL); varved with numerous silt partings	
		—	—	—	4.0			
		10	3	CS	—	5.0	...4-inch orange-brown silt layer Hard, dry/moist, gray Silty CLAY; 5 inches of silt and sand interbeds ...2-inch gray fine sand layer	
		—	—	—	4.2			
		15	4	CS	—	4.6	Stiff, moist, gray with trace red mottling CLAY (CL); 5-inch sand pocket; planar partings on 1/4-inch scale	
		—	—	—	2.5			
		20	5	CS	2.2	5.2	Very stiff, dry to moist gray Silty CLAY (CL-ML); trace sand and gravel	Lacustrine Till
		—	—	—	—	—		
		25	6	CS	—	4.6	...planar partings oriented 0-30°, one fine sand parting	
		—	—	—	—	—		
30	7	CS	4.5	5.0	Very stiff, dry to moist gray Silty CLAY; trace sand and coarse gravel Hard, dry to moist gray Silty CLAY; trace sand and coarse gravel			
—	—	—	—	—				
35	8	CS	4.5	4.7	Hard, dry to moist gray Silty CLAY; trace sand and few coarse gravel			
—	—	—	—	—				
40	9	CS	—	5.3				
LOG OF BORING FBMW-12D FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO								
CHECKED BY: JCL		DATE: 1 NOV 1990		PROJECT No.: 86C3609D-230			FIGURE No.: 16	

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27

Woodward-Clyde Consultants

Equivalent to DETMW-02D

Page 2 of 2

DEPTH (Ft)	SAMPL NO.	TYPE	B/FI	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
					Very stiff, dry to moist, gray Silty CLAY (CL-ML)	Till
					Gray SHALE (41.1 ft.)	Bedrock
					Soft, highly weathered, thin bedded	RQD=60%
45	10	CS		5.2	Weathered, moderately soft, thin bedded, gray SHALE	RQD=82%
50	11	CS		1.5	Mod. hard, slightly weath., thin bedded, gray SHALE	RQD=0%
					End of boring at 50.3 feet	
55						
60						
65						
70						
75						
80						
85						

LOG OF BORING FBW-12D
FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL DATE: 1 NOV 1990 PROJECT No.: 86C3609D-230 FIGURE No.: 16

Woodward-Clyde Consultants

Equivalent to DETMW-03D

ELEVATION TOP OF RISER PIPE: 628.45 GROUND ELEVATION: 625.95	LOCATION: Detrex DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 11 June 1990 INSPECTOR: N. Bigman	
	DEPTH (FT)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	1	CS	1.5	3.7	Stiff, moist, mottled gray and brown Sandy CLAY (CL); trace cinders, gravel, brick fragments organic material and black sand pockets	Fill	
	5	2	CS	2.0	4.3	Blk Sandy CLAY; trace cinder, grvl, sand, brick frags	Fill
						Interbedded brown and gray medium sand (SW); trace organic layers	Lacustrine
	10	3	CS	0.2	4.3	Firm, moist, black CLAY (CL); with organic material, trace roots ...3-inch gray clay layer Firm, moist, dark gray CLAY; trace organic mat. Firm, moist, black Sandy CLAY; w/ organic mat.	Lacustrine
	15	4	CS	4.2	5.0	Moist, gray, medium SAND (SW) Hard, moist, gray Silty CLAY (CL-ML); trace sand and fine to medium gravel	Till
	20	5	CS	4.5	5.0	Hard, moist, gray Silty CLAY (CL-ML); trace sand and fine gravel ...one 3-inch shale fragment. Hard, dry to moist gray Silty CLAY; trace sand and fine gravel	
	25	6	CS	4.5	5.0		
	30	7	CS	4.5	5.0		
	35	8	CS	4.6		Gray SHALE (31.0 ft.) Highly weathered, thinly bedded, blocky to fractured, soft Weathered, thinly bedded, blocky to fractured, soft ...6-inch very soft, highly weathered zone	Bedrock
40	9	CS	1.6		...two 1-inch, very soft, highly weathered zones	End of boring at 40.1 ft.	
LOG OF BORING FBMW-13D FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO							
CHECKED BY: JCL		DATE: 1 NOV 1990		PROJECT No.: 86C3609D-230		FIGURE No.: 18	

Woodward-Clyde Consultants

Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrex Corporation

Log of Boring DETMW04S

Sheet 1 of 1

Date(s) Drilled	1/4/93, 1/5/93	Logged By	M.T. Schmidt	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	632.9
Drill Rig Type	Failing F-7	Drilled By	Lahti Drilling	Total Depth Drilled (feet)	15.0
Groundwater Elevation (feet, MSL)	627.30 7/27/93	Number of Samples	Collected: 6 Analyzed: 2	Sampler Type	Continuous sample
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Type of Well Casing	PVC riser /Stainless Steel Screen
Type of Sand Pack	20 mesh	Type/Thickness of Seal(s)	1 ft bentonite pellets.	Screen Perforation	0.010 in.
Comments	Top of Well Casing Elevation (feet, MSL) 634.44				

Depth, feet	Elevation, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	REMARKS
		Type	Number	Recovery, %					
0		A				Crushed limestone GRAVEL (FILL). Very soft, moist, brown, CLAY (FILL).		0.0	
630		B	100	0.25		Soft, moist, brown and gray mottled Silty CLAY (LACUSTRINE). Stiff, moist, brown and gray mottled CLAY.		30.0	Sample sent to Lab: CBO4DS
5		C				Becomes very stiff, brown with gray mottling (LACUSTRINE).		0.0	
625		D	80	1.5-3.0		Very stiff, moist, brown with gray mottling Silty CLAY (LACUSTRINE). Very stiff, moist, brown with gray mottling CLAY, with laminations of SILT.		200.0	
10		E				Becomes brown		25.0	
620		F	100	3.0-3.5		Becomes gray with silty fine SAND laminations (LACUSTRINE).		35.0	Sample sent to Lab: CBO4FS
15						END OF BORING at 15 feet.			
615									
20									
610									
25									
605									
30									

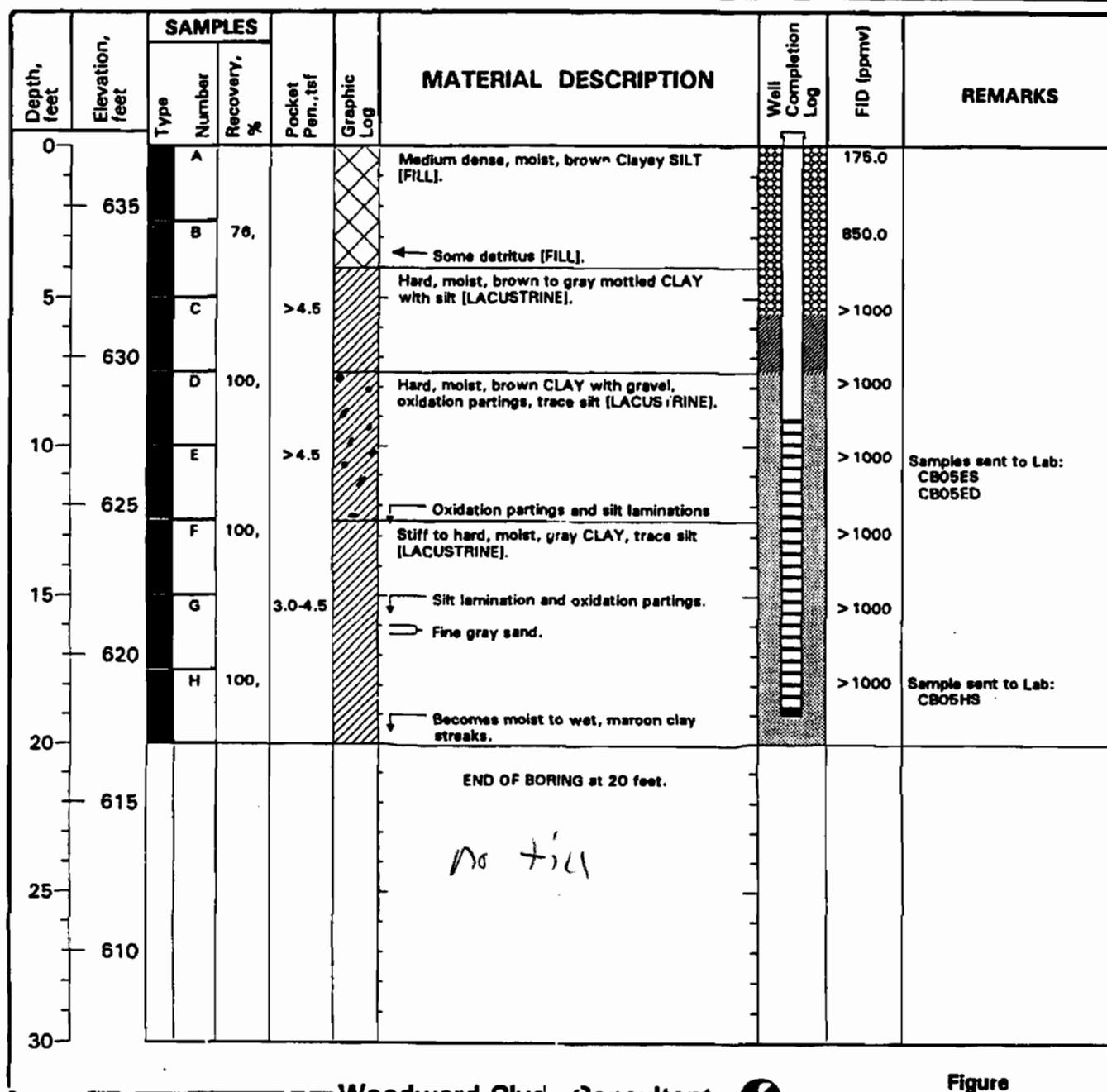
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Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrex Corporation

Log of Boring DETMW05S

Sheet 1 of 1

Date(s) Drilled	1/20/93, 1/21/93	Logged By	G.R. Lunt	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	637.0
Drill Rig Type	Failing F-7	Drilled By	Lehti Drilling	Total Depth Drilled (feet)	20.0
Groundwater Elevation (feet, MSL)	633.74 7/28/93	Number of Samples	Collected: 8 Analyzed: 3	Sampler Type	Continuous sample
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Type of Well Casing	PVC
Type of Sand Pack	20 mesh	Type/Thickness of Seal(s)	2 ft bentonite pellets.	Screen Perforation	0.010 in.
Comments	Top of Well Casing Elevation (feet, MSL) 639.35				



Woodward-Clyde Consultants

Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrex Corporation

Log of Boring DETMW06S

Sheet 1 of 1

Date(s) Drilled	1/12/93, 1/13/93	Logged By	G.R. Lunt	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	636.3
Drill Rig Type	Failing F-7	Drilled By	Lehti Drilling	Total Depth Drilled (feet)	17.5
Groundwater Elevation (feet, MSL)	631.55 7/28/93	Number of Samples	Collected: 7 Analyzed: 3	Sampler Type	Continuous sample
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Type of Well Casing	Stainless Steel
Type of Sand Pack	20 mesh	Type/Thickness of Seal(s)	2 ft bentonite pellets	Screen Perforation	0.010 in.
Comments					Top of Well Casing Elevation (feet, MSL) 638.56

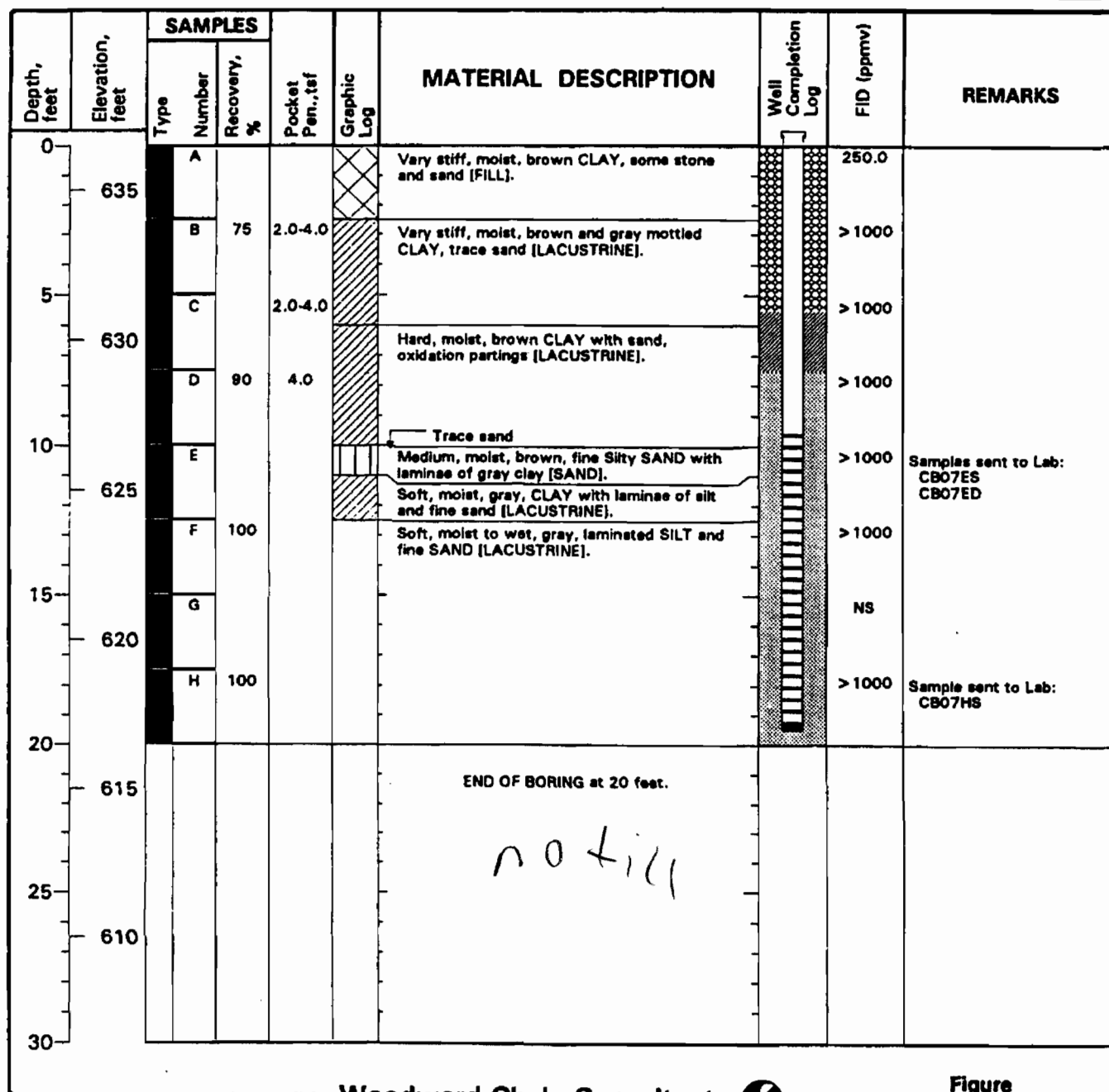
Depth, feet	Elevation, feet	SAMPLES			Pocket Pen., lbf	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	REMARKS
		Type	Number	Recovery, %						
0	635	A			0.3-4.0		Soft to hard, moist, brown, CLAY, trace sand, some gray mottling (FILL).		50.0	
		B	80		4.0		Hard, moist, brown, CLAY, some gray mottling, trace sand (LACUSTRINE).		750.0	
5		C			4.0				> 1000	
	630	D	95		4.0		← Becomes brown		> 1000	
10		E			4.0		Hard, moist, gray CLAY with laminae of silt and fine sand (LACUSTRINE). Free product at 9.9 feet.		> 1000	Samples sent to Lab: CBO6ES CBO6ED
	625	F			4.0				> 1000	
15		G	100		4.0				> 1000	Sample sent to Lab: CBO6GS
	620									
20							END OF BORING at 17.5 ft.			
	615									
25										
	610									
30										

Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrex Corporation

Log of Boring DETMW07S

Sheet 1 of 1

Date(s) Drilled	1/12/93, 1/13/93	Logged By	G.R. Lunt	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	636.5
Drill Rig Type	Failing F-7	Drilled By	Lahti Drilling	Total Depth Drilled (feet)	20.0
Groundwater Elevation (feet, MSL)	N/A	Number of Samples	Collected: 8 Analyzed: 3	Sampler Type	Continuous sample
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Type of Well Casing	Stainless Steel
Type of Sand Pack	20 mesh	Type/Thickness of Seal(s)	2 ft bentonite pellets	Screen Perforation	0.010 in.
Comments					Top of Well Casing Elevation (feet, MSL) 638.71



11/8/93 1WL7A FBOET

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Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrax Corporation

Log of Boring DETMW08S

Sheet 1 of 1

Date(s) Drilled	1/11/93	Logged By	G.R. Lunt	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	636.4
Drill Rig Type	Failing F-7	Drilled By	Lahti Drilling	Total Depth Drilled (feet)	20.0
Groundwater Elevation (feet, MSL)	633.16 7/28/93	Number of Samples	Collected: 8 Analyzed: 3	Sampler Type	Continuous sample
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Type of Well Casing	Stainless Steel
Type of Sand Pack	20 mesh	Type/Thickness of Seals	2 ft bentonite pellets	Screen Perforation	0.010 in.
Comments					Top of Well Casing Elevation (feet, MSL) 638.79

Depth, feet	Elevation, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	REMARKS
		Type	Number	Recovery, %					
0	635	A				Loose, moist, brown, CLAY with gravel (FILL).		550.0	
						Stiff, moist, brown, CLAY (LACUSTRINE).			
		B	81		2.0-3.0	Medium, moist, gray to black CLAY, (Stained) (LACUSTRINE).		> 1000	
						Hard, moist, gray to brown, mottled, CLAY (LACUSTRINE).			
5		C			4.0			> 1000	
	630	D	100			Trace sand		> 1000	
		E				Soft, wet, brown, Sandy CLAY.		> 1000	Samples sent to Lab: CBO8ES CBO8ED
10	625	F	100		4.0	Very stiff, hard, moist, gray, Sandy CLAY.		> 1000	
						Hard, moist, gray, CLAY with silt, trace gravel (LACUSTRINE).		> 1000	
15		G				Increasing silt content.		> 1000	
	620					Becomes wet.			
		H	100		4.0	Becomes laminated (Free product).		> 1000	Sample sent to Lab: CBO8HS
20									
	615					END OF BORING at 20 feet.			
25									
	610								
30									

11/8/93 1WL7A FBOET

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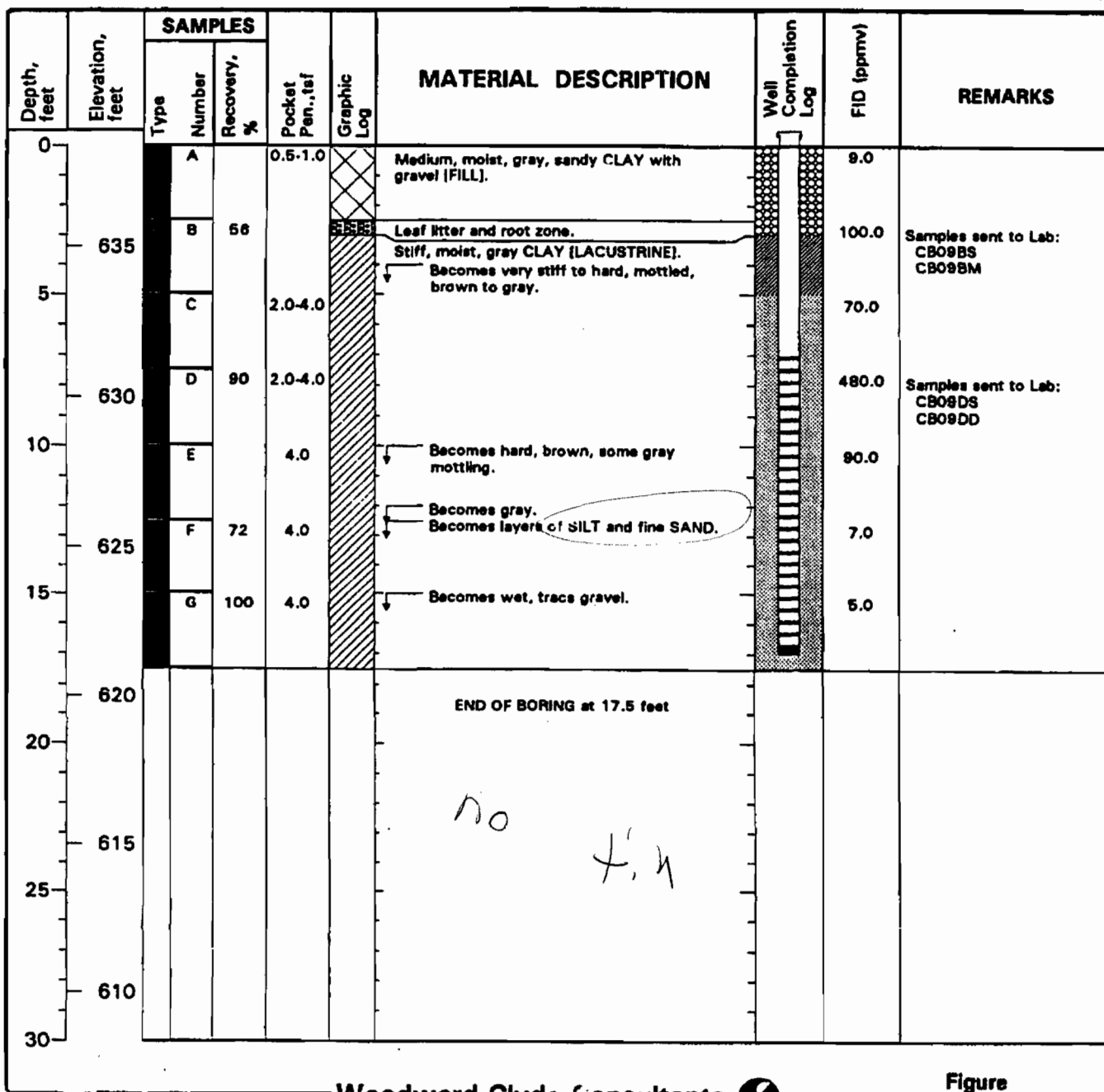
Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrex Corporation

Log of Boring DETMW09S

Sheet 1 of 1

Date(s) Drilled	1/9/93	Logged By	G.R. Lunt	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	638.4
Drill Rig Type	Failing F-7	Drilled By	Lahti Drilling	Total Depth Drilled (feet)	17.5
Groundwater Elevation (feet, MSL)	633.25	7/27/93	Number of Samples	Collected: 7	Analyzed: 4
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Type of Well Casing	Stainless Steel
Type of Sand Pack	20 mesh	Type/Thickness of Seal(s)	2 ft bentonite pellets	Screen Perforation	0.010 in.
Comments					Top of Well Casing Elevation (feet, MSL) 640.79



Woodward-Clyde Consultants

Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio

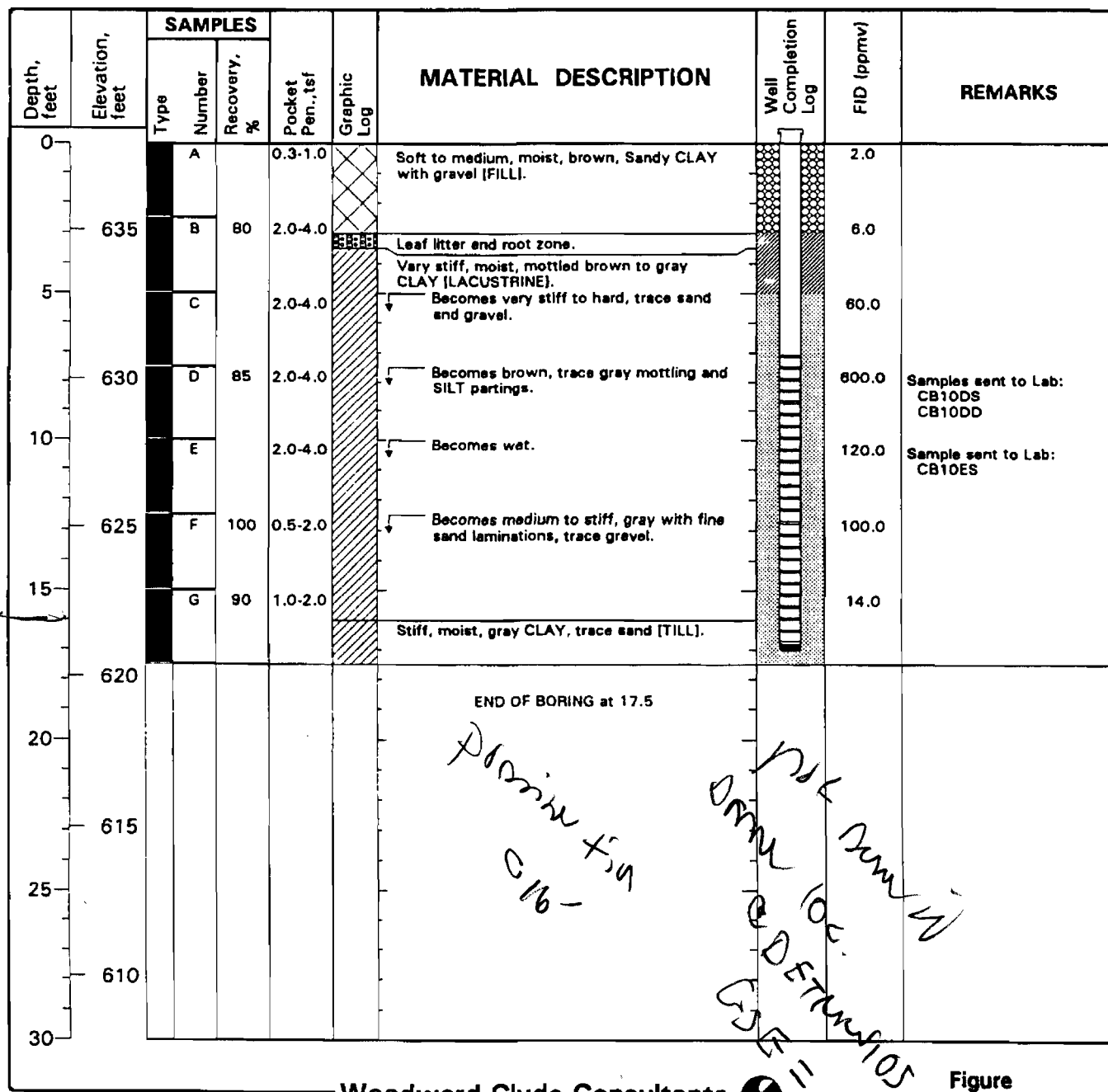
Project Number: 86C3609K

Boring Location: Detrex Corporation

Log of Boring DETMW10S

Sheet 1 of 1

Date(s) Drilled	1/7/93	Logged By	G.R. Lunt	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	637.9
Drill Rig Type	Failing F-7	Drilled By	Lahti Drilling	Total Depth Drilled (feet)	17.5
Groundwater Elevation (feet, MSL)	631.65 7/27/93	Number of Samples Collected:	7	Analyzed:	3
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Sampler Type	Continuous sample
Type of Sand Pack	20 mesh	Type of Well Casing	Stainless Steel	Screen Perforation	0.010 in.
Comments	Type/Thickness of Seal(s) 2 ft bentonite pellets				
					Top of Well Casing Elevation (feet, MSL) 640.43



11/8/93 1WL7A FBDET

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Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrex Corporation

Log of Boring DETMW11S

Sheet 1 of 1

Date(s) Drilled	1/6/93, 1/7/93	Logged By	M.T. Schmidt	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	635.0
Drill Rig Type	Failing F-7	Drilled By	Lehti Drilling	Total Depth Drilled (feet)	20.0
Groundwater Elevation (feet, MSL)	629.32 7/27/93	Number of Samples	Collected: 8 Analyzed: 2	Sampler Type	Continuous sample
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Type of Well Casing	Stainless Steel
Type of Sand Pack	20 mesh	Type/Thickness of Seal(s)	1 ft bentonite pellets	Screen Perforation	0.010 in.
Comments				Top of Well Casing Elevation (feet, MSL)	637.28

Depth, feet	Elevation, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	REMARKS
		Type	Number	Recovery, %					
0	635	A				Medium dense, moist, brown, SILT [TOPSOIL].		2.0	
		B	90	2.0-4.0		Stiff to very stiff, moist, mottled brown and gray CLAY with sand, and trace gravel [LACUSTRINE]. Becomes Silty CLAY trace sand,		0.0	Sample sent to Lab: CB11BS
5	630	C		4.0		Hard, moist, brown with gray mottling, CLAY with occasional yellow to brown silt laminations [LACUSTRINE].		0.0	
		D	85	4.0		Becomes dark brown with yellow to brown, fine Silty SAND, layers (up to 0.1 ft thick). Becomes medium to stiff.		0.0	Sample sent to Lab: CB11DS
10	625	E		4.0				0.0	
		F	100	2.0-4.0		Becomes very stiff to hard, gray, interbedded layers of CLAY, SILT, and fine silty SAND, trace gravel.		1.0	
15	620	G		0.3-2.0		Wet, gray, fine silty SAND [SAND].		1.0	
		H	95	1.0-2.0		Very soft, wet, gray CLAY [LACUSTRINE]. Stiff, moist, gray Sandy CLAY, trace gravel [TILL].		100.0	
20	615					END OF BORING at 20 feet.			
25	610								
30	605								

*Pro-Me
+ Silty
16.5*

11/8/93 1WL7A FBDET

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Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrex Corporation

Log of Boring DETMW12S

Sheet 1 of 1

Date(s) Drilled	2/7/93	Logged By	E. Page	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	622.2
Drill Rig Type	Failing F-7	Drilled By	Lehti Drilling	Total Depth Drilled (feet)	12.0
Groundwater Elevation (feet, MSL)	620.93 7/27/93	Number of Samples	Collected: 4 Analyzed: 2	Sampler Type	Continuous sample
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Type of Well Casing	Stainless Steel
Type of Sand Pack	20 mesh	Type/Thickness of Seal(s)	1 ft bentonite pellets	Screen Perforation	0.010 in.
Comments					Top of Well Casing Elevation (feet, MSL) 624.03

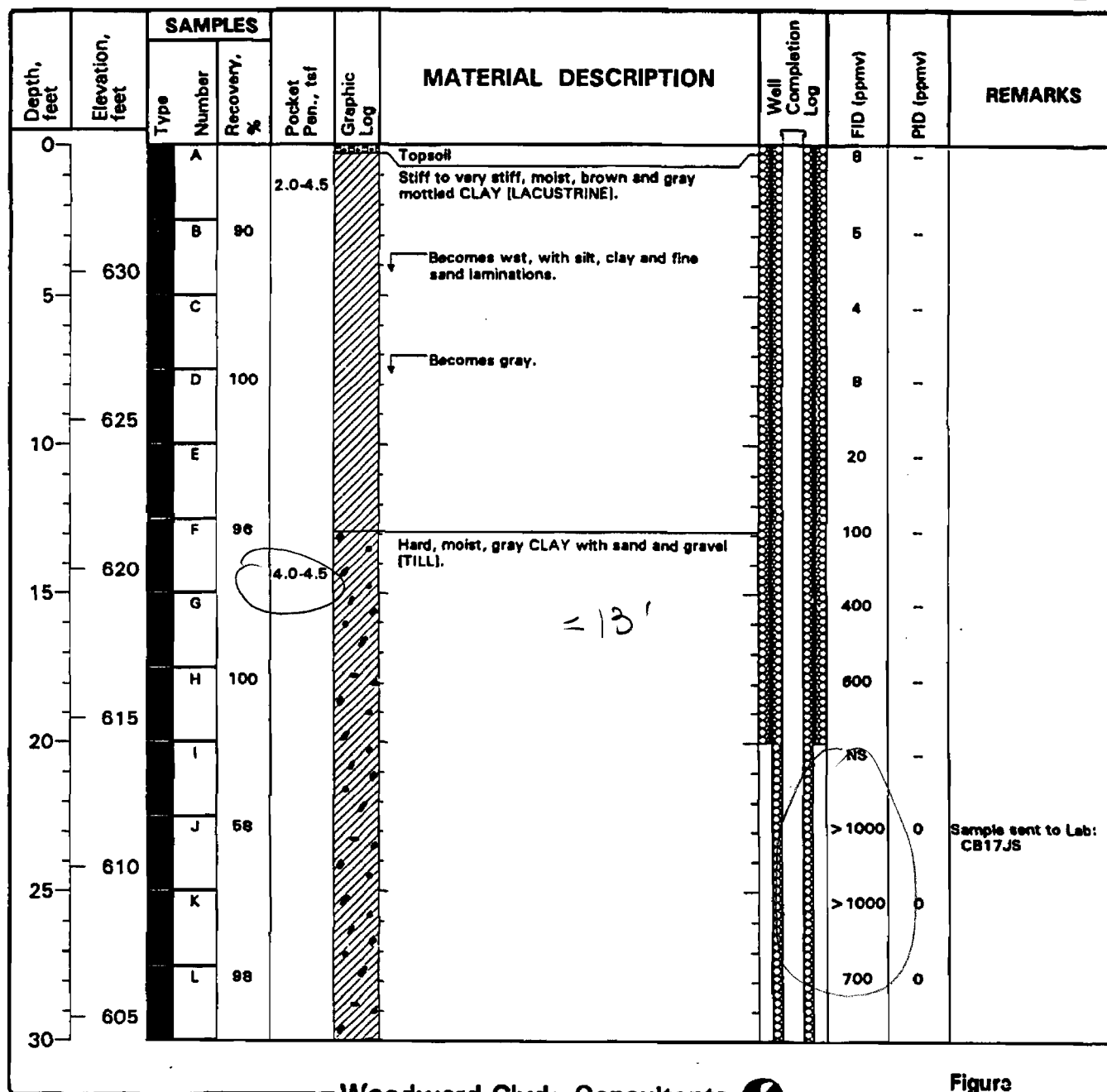
Depth, feet	Elevation, feet	SAMPLES			Pocket Pen., lbf	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	REMARKS
		Type	Number	Recovery, %						
0		A					Soft, moist, brown CLAY with silt, root hairs, and fine to coarse gravel, trace oxidation stains [FILL].		0.0	
620		B	78				↓ Becomes wet, dark gray, loose silt, with fine sand, some clay. Dark staining, detritus or wood fragments from 3.5 to 3.7 feet [FILL].		12.0	Sample sent to Lab: CB12BS
5		C							5.0	Sample sent to Lab: CB12CS
615		D	100				Soft to hard, moist, brown to gray, mottled CLAY with silt, trace oxidation stains, and coarse sand to fine gravel, (Free Product) [LACUSTRINE].		30.0	
10							Medium, to hard, moist, gray, CLAY with silt, trace coarse sand to fine angular gravel [TILL].			10-12 feet logged by cuttings.
610							END OF BORING at 12.0 feet.			
15							2 ft in @ 10,			
605										
20										
600										
25										
595										
30										

Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrex Corporation

Log of Boring DETMW17D

Sheet 1 of 2

Date(s) Drilled	5/27/93, 6/7/93		Logged By	L.J. Mazer		Checked By	J.A. Ozimek	
Drilling Method	Hollow stem auger (0-38 ft) Wet rotary (38-48 ft)		Auger Bit Size/Type (in. I.D.)	8.25 (0-20 ft) 4.25 (20-38ft)		Approx. Surface Elevation (feet, MSL)	634.2	
Drill Rig Type	Falling F-7		Drilled By	Lahti Drilling		Total Depth Drilled (feet)	48.0	
Groundwater Elevation (feet, MSL)	604.48	7/27/93	Number of Samples	Collected: 20	Analyzed: 2	Sampler Type	Continuous sample NX core barrel	
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Type of Well Casing	Stainless Steel		Screen Perforation	0.010 in.
Type of Sand Pack	20 mesh		Type/Thickness of Seal(s)	4 ft. Bentonite slurry.				
Comments	10 in. I.D. steel casing from 0-20 ft., grouted in place.					Top of Well Casing Elevation (feet, MSL)	635.83	



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Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrex Corporation

Log of Boring DETMW17D

Sheet 2 of 2

Depth, feet	Elevation, feet	SAMPLES			Pocket Pen., tsf	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	PID (ppmv)	REMARKS
		Type	Number	Recovery, %							
30		M					Hard, moist, gray CLAY with sand and gravel [TILL].		> 1000	0	
	600	N		80					> 1000	0	
35		O							> 1000	0	
	595	P Q		100			Soft, gray SHALE with occasional interbedded siltstone, thinly bedded, slightly weathered [BEDROCK].		> 1000 --	0 --	Sample sent to Lab: CB17PS
40		R		88					--	--	
	590	S							--	--	
45		T		97					--	--	
	585						END OF BORING at 48 feet.				
50											
	580										
55											
	575										
60											
	570										
65											
	565										
70											

11/8/83 1WL7 F8DET

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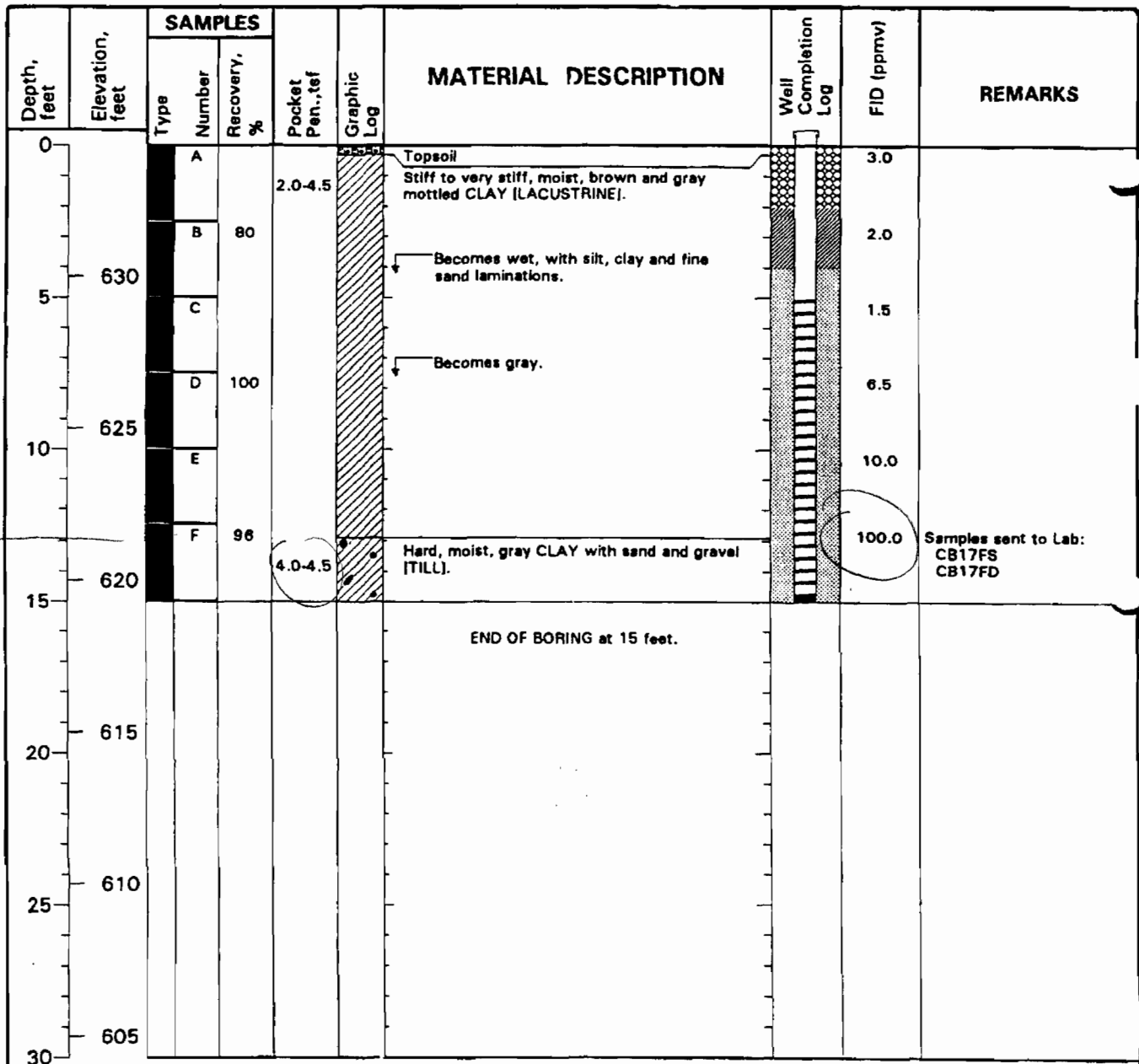
Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrex Corporation

Log of Boring DETMW17S

Sheet 1 of 1

Date(s) Drilled	6/4/93	Logged By	G.R. Lunt	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	634.3
Drill Rig Type	Failing F-7	Drilled By	Lahti Drilling	Total Depth Drilled (feet)	15.0
Groundwater Elevation (feet, MSL)	628.58 7/27/93	Number of Samples Collected:	6	Analyzed:	2
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Sampler Type	Continuous sample
Type of Sand Pack	20 mesh	Type of Well Casing	Stainless Steel	Screen Perforation	0.010 in.
		Type/Thickness of Seal(s)	2 ft. Bentonite pellets.		
Comments				Top of Well Casing Elevation (feet, MSL)	635.90



11/8/93 1WL7A FBDET

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Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrex Corporation

Log of Boring DETMW18D

Sheet 1 of 2

Date(s) Drilled	5/28/93, 6/1/93	Logged By	L.J. Mazer	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger (0-38.5 ft) Wet rotary (38.5-48.5 ft)	Auger Bit Size/Type (in. I.D.)	8.25 (0-17.5 ft) 4.25 (17.5-38.5 ft)	Approx. Surface Elevation (feet, MSL)	635.0
Drill Rig Type	Failing F-7	Drilled By	Lahti Drilling	Total Depth Drilled (feet)	49.0
Groundwater Elevation (feet, MSL)	589.59 7/27/93	Number of Samples	Collected: 20 Analyzed: 2	Sampler Type	Continuous sample NX core barrel
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Type of Well Casing	Stainless Steel
Type of Sand Pack	20 mesh	Type/Thickness of Seal(s)	3 ft. Bentonite slurry.	Screen Perforation	0.010 in.
Comments				Top of Well Casing Elevation (feet, MSL)	637.01

Depth, feet	Elevation, feet	SAMPLES			Pocket Pen., tf	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	PID (ppmv)	REMARKS
		Type	Number	Recovery, %							
0	635	A					Topsoil.		0	-	
					2.0-3.5		Firm to stiff, moist, brown and gray mottled CLAY, trace sand (LACUSTRINE).		0	-	
		B	84						0	-	
5	630	C					Becomes laminations of silt, sand, and clay.		0	-	
		D	78						0	-	
10	625	E					Becomes gray.		11	-	
		F	100						22	-	
15	620	G			1.7-2.5		Very stiff, moist, gray CLAY with sand, trace gravel (TILL).		100	-	
		H	100						110	-	
20	615	I							550	0	
		J	100				Becomes very stiff to hard.		680	5	Sample sent to Lab: CB18JS
25	610	K							990	0	
		L	76						810	0	
30	605										

11/8/93 1WL7 F8DE1

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Figure


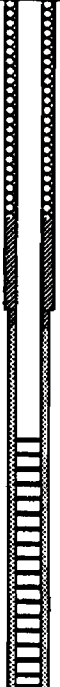


Project: Fields Brook Superfund Site - Ashtabula, Ohio

Project Number: 86C3609K

Boring Location: Detrex Corporation

Log of Boring DETMW18D

Sheet 2 of 2

Depth, feet	Elevation, feet	SAMPLES			Pocket Pen., tsf	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	PID (ppmv)	REMARKS
		Type	Number	Recovery, %							
30	605	M					Very stiff to hard, moist, gray CLAY with sand, trace gravel [TILL].		660	0	Sample sent to Lab: CB18PS
		N	78						> 1000	0	
35	600	O							890	0	
		P	100						830	0	
		Q					Soft, gray SHALE and interbedded siltstone, thinly bedded, slightly weathered [BEDROCK].		-	-	
40	595	R	100						-	-	
		S							-	-	
45	590	T	100						-	-	
50	585						END OF BORING at 49 feet.				
55	580										
60	575										
65	570										
70											

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Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrex Corporation

Log of Boring DETMW18S

Sheet 1 of 1

Date(s) Drilled	6/2/93	Logged By	G.R. Lunt	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	634.8
Drill Rig Type	Failing F-7	Drilled By	Lahti Drilling	Total Depth Drilled (feet)	15.0
Groundwater Elevation (feet, MSL)	629.84 7/27/93	Number of Samples	Collected: 6 Analyzed: 1	Sampler Type	Continuous sample
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Type of Well Casing	Stainless Steel
Type of Sand Pack	20 mesh	Type/Thickness of Seal(s)	2 ft. Bentonite pellets.	Screen Perforation	0.010 in.
Comments					Top of Well Casing Elevation (feet, MSL) 636.46

Depth, feet	Elevation, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	REMARKS
		Type	Number	Recovery, %					
0		A			2.0-3.5	Topsoil.		4.0	Sample sent to Lab: CB188S
		B	80			Firm to stiff, moist, brown and gray mottled CLAY, trace sand [LACUSTRINE].		1.0	
5	630	C				Becomes laminations of silt, sand, and clay.		NS	
		D	58					2.0	
10	625	E				Becomes gray.		4.5	
		F	88		1.7-2.5	Very stiff, moist, gray CLAY with sand, trace gravel [TILL].		20.0	
15	620					END OF BORING at 15 feet.			
20	615								
25	610								
30	605								

11/6/93 1WL7A FBDET

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Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrex Corporation

Log of Boring DETMW20S

Sheet 1 of 1

Date(s) Drilled	6/10/93	Logged By	L.J. Mazer	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	632.5
Drill Rig Type	Failing F-7	Drilled By	Lahti Drilling	Total Depth Drilled (feet)	20.0
Groundwater Elevation (feet, MSL)	629.85 7/26/93	Number of Samples	Collected: 8 Analyzed: 2	Sampler Type	Continuous sample
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Type of Well Casing	Stainless Steel
Type of Sand Pack	20 mesh	Type/Thickness of Seal(s)	2 ft. Bentonite pellets.	Screen Perforation	0.010 in.
Comments				Top of Well Casing Elevation (feet, MSL)	633.75

Depth, feet	Elevation, feet	SAMPLES		Pocket Pen., tsf	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	REMARKS
		Type	Number Recovery, %						
0		A				Medium, moist, brown to gray, CLAY (FILL).		180.0	
630		B	80			Stiff, moist, brown CLAY and TOPSOIL.		> 1000	
5		C		2.5-4.5		Stiff, moist, brown to gray mottled CLAY (LACUSTRINE).		> 1000	
625		D	100	> 4.5		Dense, moist, brown, Silty CLAY (LACUSTRINE).		> 1000	Sample sent to Lab: CB20DS
10		E				Increasing silt content.		> 1000	DNAPL
620		F	96	1.5-2.5		Medium to stiff, moist, gray laminations SILT, CLAY, and SAND (LACUSTRINE).		660.0	
15		G		1.5-2.5				120.0	
615		H	96					140.0	Sample sent to Lab: CB20HS
20				> 4.5		Very stiff to hard, moist, gray CLAY with sand, trace gravel, occasional red staining (TILL).			low conc
610						END OF BORING at 20 feet.			
25									
605									
30									

11/8/93 1WL7A FBDET

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Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio

Project Number: 86C3609K

Boring Location: Detrex Corporation

Log of Boring DETMW21S

Sheet 1 of 1

Date(s) Drilled	6/10/93	Logged By	L.J. Mazer	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	635.1
Drill Rig Type	Failing F-7	Drilled By	Lahti Drilling	Total Depth Drilled (feet)	20.0
Groundwater Elevation (feet, MSL)	633.63	7/26/93	Number of Samples	Collected: 8	Analyzed: 2
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	2	Type of Well Casing	Stainless Steel
Type of Sand Pack	20 mesh	Type/Thickness of Seal(s)	2 ft. Bentonite pellets.	Screen Perforation	0.010 in.
Comments	Top of Well Casing Elevation (feet, MSL) 636.77				

Depth, feet	Elevation, feet	SAMPLES			Pocket Pen., tsf	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	REMARKS
		Type	Number	Recovery, %						
0	635	A					Medium, moist, brown CLAY [TOPSOIL].		3.5	Sample sent to Lab: CB218S
		B	80		1.5-3.0		Stiff to hard, moist, brown and gray mottled CLAY [LACUSTRINE].		3.0	
5	630	C							1.5	
		D	92		>4.5		Vertical and horizontal oxidation staining and partings.		2.0	
10	625	E							3.0	Sample sent to Lab: CB21GS
		F	100		2.0-3.0		Very stiff, moist, gray, CLAY, trace sand [LACUSTRINE].		4.0	
15	620	G							4.0	
		H	96		2.0-3.0		Becomes laminated.		4.0	
20	615						END OF BORING at 20 feet.			
25	610						(not in)			
30										

11/6/93 1WL7A FBOET

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Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio

Project Number: 86C3609K

Boring Location: Detrex Corporation

Log of Boring DETSB13

Sheet 1 of 1

Date(s) Drilled	1/20/93	Logged By	G.R. Lunt	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	629.2
Drill Rig Type	Failing F-7	Drilled By	Lahti Drilling	Total Depth Drilled (feet)	20.0
Groundwater Elevation (feet, MSL)	N/A	Number of Samples	Collected: 8 Analyzed: 3	Sampler Type	Continuous sample
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	N/A	Screen Perforation	N/A
Type of Sand Pack	N/A	Type/Thickness of Seal(s)	N/A		
Comments	No well installed, borehole tremie grouted to grade.				Top of Well Casing Elevation (feet, MSL) N/A

Depth, feet	Elevation, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	REMARKS
		Type	Number	Recovery, %					
0		A				Hard, moist, gray to brown mottled Silty CLAY [FILL].		1.5	
		B		78				25.0	
5	625	C				Soft, moist, gray to black Silty CLAY with sand, trace gravel and detritus [LACUSTRINE].		850.0	
		D		100				> 1000	Samples sent to Lab: CB13DS CB13DD
10	620	E				Firm to hard, moist, gray SILT, trace clay [LACUSTRINE].		> 1000	Sample sent to Lab: CB13ES
		F		100		Firm, moist to wet, gray to brown silty CLAY [LACUSTRINE].			
15	615	G				Decreasing silt. Fine sand seams.		600.0	
		H		100		Hard, moist, gray, CLAY with fine to coarse gravel [TILL].		0.0	
20	610							2.0	
						END OF BORING at 20 feet.			
25	605								
30	600								

11/8/93 LWL7A F8DE1

Woodward-Clyde Consultants

Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio
Project Number: 86C3609K
Boring Location: Detrax Corporation

Log of Boring DETSB14

Sheet 1 of 1

Date(s) Drilled	1/21/93	Logged By	G.R. Lunt			Checked By	J.A. Ozimek	
Drilling Method	Hollow stem auger		Auger Bit Size/Type (in. I.D.)	4.25		Approx. Surface Elevation (feet, MSL)	634.0	
Drill Rig Type	Failing F-7		Drilled By	Lahti Drilling			Total Depth Drilled (feet)	20.0
Groundwater Elevation (feet, MSL)	N/A		Number of Samples	Collected: 8	Analyzed: 3	Sampler Type	Continuous sample	
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	N/A			Screen Perforation	N/A	
Type of Sand Pack	N/A		Type/Thickness of Seal(s)	N/A				
Comments	No well installed, borehole tremie grouted to grade.					Top of Well Casing Elevation (feet, MSL)	N/A	

Depth, feet	Elevation, feet	SAMPLES			Pocket Pen., tsf	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	REMARKS
		Type	Number	Recovery, %						
0		A					Firm to hard, moist, brown, CLAY with gravel (FILL).		1.0	
		B		80			Hard, moist, tan to brown SILT with clay (LACUSTRINE).		1.5	
5	630	C					Firm to hard, moist brown to gray mottled CLAY with silt (LACUSTRINE).		150.0	
		D		100			Hard, moist, brown CLAY with coarse sand, fine gravel and silt laminations (LACUSTRINE).		250.0	
10	625	E							800.0	Samples sent to Lab: CB14E8 CB14ED
		F		100			Soft to firm, moist, gray CLAY, trace silt (LACUSTRINE).		450.0	Sample sent to Lab: CB14F8
15	620	G		0					450.0	
		H		100			← Brown silt layers, interbedded with gray clay.		75.0	
20	615						Medium dense, wet, gray SAND [SAND].			
							END OF BORING at 20 feet.			
25	610									
30	605									

Project: Fields Brook Superfund Site - Ashtabula, Ohio
 Project Number: 86C3609K
 Boring Location: Detrex Corporation

Log of Boring DETSB15

Sheet 1 of 1

Date(s) Drilled	1/22/93	Logged By	G.R. Lunt			Checked By	J.A. Ozimek	
Drilling Method	Hollow stem auger		Auger Bit Size/Type (in. I.D.)	4.25		Approx. Surface Elevation (feet, MSL)	635.8	
Drill Rig Type	Falling F-7		Drilled By	Lehti Drilling			Total Depth Drilled (feet)	20.0
Groundwater Elevation (feet, MSL)	N/A		Number of Samples	Collected: 8	Analyzed: 3	Sampler Type	Continuous sample	
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	N/A			Screen Perforation	N/A	
Type of Sand Pack	N/A		Type/Thickness of Seal(s)	N/A				
Comments	No well installed, borehole tremie grouted to grade.					Top of Well Casing Elevation (feet, MSL)	N/A	

Depth, feet	Elevation, feet	SAMPLES		Pocket Pen., lbf	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	REMARKS
		Type	Number	Recovery, %					
0	635	A				Hard, moist, brown CLAY with gravel [FILL].		100.0	Samples sent to Lab: CB15CS CB15CD Sample sent to Lab: CB15HS
		B	100			Firm to hard, moist, gray CLAY with silt, trace coarse sand [FILL].		350.0	
5	630	C				Firm to hard, moist, brown to gray laminated CLAY, trace silt and detritus at 3.3 - 3.9 ft [LACUSTRINE].		800.0	
		D	100			Hard, moist, brown to gray mottled CLAY with silt, trace fine gravel [LACUSTRINE].		30.0	
10	625	E				Silt laminations and oxidation partings		140.0	
		F	0			Firm to hard, moist to wet, brown CLAY with silt, oxidation partings with thin gray clay layers [LACUSTRINE].		360.0	
15	620	G				Soft, moist to wet, gray CLAY, trace silt [LACUSTRINE].		600.0	
		H	100			Medium dense, wet, gray SILT with maroon clay laminations, trace fine sand [LACUSTRINE].		860.0	
20	615					END OF BORING at 20 feet.			
25	610								
30									

11/8/93 1WL7A ET

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Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio

Project Number: 86C3609K

Boring Location: Detrex Corporation

Log of Boring DETSB16

Sheet 1 of 1

Date(s) Drilled	1/18/93	Logged By	G.R. Lunt	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	636.1
Drill Rig Type	Failing F-7	Drilled By	Lahti Drilling	Total Depth Drilled (feet)	20.0
Groundwater Elevation (feet, MSL)	N/A	Number of Samples	Collected: 8 Analyzed: 3	Sampler Type	Continuous sample
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	N/A	Screen Perforation	N/A
Type of Sand Pack	N/A	Type/Thickness of Seal(s)	N/A		
Comments	No well installed, borehole tremie grouted to grade.				Top of Well Casing Elevation (feet, MSL) N/A

Depth, feet	Elevation, feet	SAMPLES		Pocket Pen., tsf	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	REMARKS
		Type	Number Recovery, %						
0	635	A		0.5-4.0		Firm to hard, moist, brown, CLAY with gravel [FILL].		0.5	
		B	78	4.0		Hard, moist, brown to gray mottled CLAY with silt and fine gravel [LACUSTRINE].		4.0	
5	630	C		4.0				6.0	
		D	100	4.0		Decreasing mottling, becomes brown. Hard, moist, brown CLAY with silt, oxidation partings. Increasing silt content at 8.7 feet [LACUSTRINE].		7.0	
10	625	E		4.0		Becomes gray with brown silt laminations and partings.		7.5	Sample sent to Lab: CB16ES
		F	100	4.0				5.5	
15	620	G						0.0	
		H	50	4.0				37.0	Samples sent to Lab: CB16HS CB16HD
20	615					END OF BORING at 20 feet.			
25	610								
30									

11/6/93 1WL7A F8DET

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Figure

Project: Fields Brook Superfund Site - Ashtabula, Ohio

Project Number: 86C3609K

Boring Location: Detrex Corporation

Log of Boring DETSB19

Sheet 1 of 1

Date(s) Drilled	6/9/93	Logged By	G.R. Lunt	Checked By	J.A. Ozimek
Drilling Method	Hollow stem auger	Auger Bit Size/Type (in. I.D.)	4.25	Approx. Surface Elevation (feet, MSL)	635.2
Drill Rig Type	Failing F-7	Drilled By	Lahti Drilling	Total Depth Drilled (feet)	15.0
Groundwater Elevation (feet, MSL)	N/A	Number of Samples Collected:	6	Analyzed:	2
		Sampler Type	Continuous sample		
Diameter of Hole (inches)	8.25	Diameter of Well (inches)	N/A	Screen Perforation	N/A
Type of Sand Pack	N/A	Type/Thickness of Seal(s)	N/A		
Comments	No well installed, borehole tremie grouted to grade.			Top of Well Casing Elevation (feet, MSL)	N/A

Depth, feet	Elevation, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID (ppmv)	REMARKS
		Type	Number	Recovery, %					
0	635	A			1.5	Medium, moist, brown, CLAY, SAND and GRAVEL (FILL).		300.0	
		B	88	2.5-3.5		Moist, topsoil.		500.0	Sample sent to Lab: CB19BS
5	630	C				Stiff, moist, brown and gray mottled CLAY (LACUSTRINE).		> 1000	
		D	88	3.5-4.5		Very stiff to hard, moist, brown CLAY, trace sand and oxidation staining (LACUSTRINE).		> 1000	
10	625	E				Hard, moist, gray CLAY, occasional silt laminae (LACUSTRINE).		> 1000	Sample sent to Lab: CB19ES
		F	90	> 4.5		Dark red product encountered.		> 1000	= DNAPL
15	620					END OF BORING at 15 feet.			
						no fill			
20	615								
25	610								
30									

11/8/93 1WL7A FBDET

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Figure

Project: Detrex Corporation
Project Location: Ashtabula, Ohio
Project Number: 5E06680

Log of Boring DETDB01




Sheet 1 of 1

Date(s) Drilled	1/31/97	Logged By	R. Fabian	Checked By	N. Sauer
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	2-1/4-inch-ID / 5-inch-OD auger	Surface Elevation	Not available
Drill Rig Type	Falling F-7	Drilling Contractor	Lahti Drilling	Total Depth	12.0 feet
Groundwater Depth and Date Measured	Not measured	Sampler Type	2 x 24-inch split spoon	Hammer Data	140 lbs, 30-inch drop
Diameter of Hole (inches)	5	Diameter of Well (inches)	None	Type of Well Casing	Not applicable
Type of Sand Pack	Not applicable	Type/Depth of Seal(s)	No piezometer installed; borehole backfilled to surface with grout		
Comments	See site plan for location.				

Elevation, feet	Depth, feet	SAMPLES					MATERIAL DESCRIPTION	Well / Hole Completion Log	REMARKS
		Type	Number	Recovery, inches	Blows per 6 inches (SPT N)	Headspace HNu, ppmv			
0							(Borehole drilled to 5 feet without sampling.)		Cloudy, 34° during drilling.
5			1	18	7-9-13-15 (22)	500	Very stiff, moist, brown CLAY, with gravel [Fill]. Very stiff, moist, mottled brown to gray CLAY [Lacustrine].		
10			2	18	8-8-14-18 (22)	100	Becomes gray. Very stiff, moist, brown, sandy CLAY, with trace gravel.		HNu reading 500 ppm in borehole.
15							Bottom of boring at 12.0 feet.		
20									
25									

Project: Detrex Corporation Project Location: Ashtabula, Ohio Project Number: 5E06680	Log of Boring DETDB02 Sheet 1 of 1
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Date(s) Drilled	1/31/97	Logged By	R. Fabian	Checked By	N. Sauer
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	2-1/4-Inch-ID / 5-Inch-OD auger	Surface Elevation	Not available
Drill Rig Type	Falling F-7	Drilling Contractor	Lahti Drilling	Total Depth	7.0 feet
Groundwater Depth and Date Measured	Not measured	Sampler Type	2 x 24-Inch split spoon	Hammer Data	140 lbs, 30-Inch drop
Diameter of Hole (inches)	5	Diameter of Well (inches)	None	Type of Well Casing	Not applicable
Type of Sand Pack	Not applicable	Type/Depth of Seal(s)	No piezometer installed; borehole backfilled to surface with grout		
Comments: See site plan for location.					

Elevation, feet	Depth, feet	SAMPLES					MATERIAL DESCRIPTION	Well / Hole Completion Log	REMARKS	
		Type	Number	Recovery, inches	Blows per 6 inches (SPT N)	Headspace HNU, ppmv				Graphic Log
	0									
							[Borehole drilled to 5 feet without sampling.]			Cloudy, 34° during drilling.
	5		1	18	7-8-15-20 (23)	200		Very stiff, moist, brown CLAY, with trace silty sand, trace organic material [Lacustrine].		HNU reading 20 ppm in cuttings, 0 ppm in breathing zone while augering from 5-7 ft. HNU reading 200 ppm in borehole.
							Bottom of boring at 7.0 feet.			
	10									
	15						(not in)			
	20									
	25									

Project: Detrex Corporation
Project Location: Ashtabula, Ohio
Project Number: 5E06680

Log of Boring DETDP01

Sheet 1 of 1

Date(s) Drilled	1/30/97	Logged By	R. Fabian	Checked By	N. Sauer
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	2-1/4-inch-ID / 5-inch-OD auger	Top of Casing Elevation	636.03 feet MSL
Drill Rig Type	Felling F-7	Drilling Contractor	Lahti Drilling	Total Depth	24.0 feet
Groundwater Depth and Date Measured	Not measured	Sampler Type	2 x 24-inch split spoon	Hammer Data	140 lbs, 30-inch drop
Diameter of Hole (inches)	5	Diameter of Well (inches)	2	Type of Well Casing	Schedule 40 PVC
Type of Sand Pack	Filter sand	Type/Depth of Seal(s)	Bentonite 6 ft to surface	Screen Perforation	0.010-inch slot
Comments See site plan for location.					

Elevation, feet	Depth, feet	SAMPLES					MATERIAL DESCRIPTION	Piezometer Completion Log	REMARKS
		Type	Number	Recovery, inches	Blows per 6 inches (SPT N)	Headspace H ₂ O, ppmv			
0	0						[Borehole drilled to 5 feet without sampling.]		Cloudy, calm, 18° during drilling.
630	5		1	24	7-10-11-15 (21)	0	Very stiff, moist, mottled brown and gray CLAY, with trace sand and organic material (Lacustrine).		
625	10		2	15	3-15-12-13 (27)	0	With some sand, no organic material.		
620	15		3	12	6-12-11-15 (23)	0	Medium dense, moist, gray, SILT and fine SAND.		
615	20		4	24	8-9-9-11 (18)	0	Very stiff, wet, gray CLAY, with trace fine sand and silt (Till).		HNu reading 70 ppm in borehole; 0 ppm in breathing zone.
610	25						Bottom of boring at 24.0 feet.		Boring sampled to 22 ft, then augered to 24 ft for piezometer installation.

Project: Detrax Corporation
 Project Location: Ashtabula, Ohio
 Project Number: 5E06680

Log of Boring DETDP02

Sheet 1 of 1

Date(s) Drilled	1/30/97	Logged By	R. Fabian	Checked By	N. Sauer
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	2-1/4-inch-ID / 5-inch-OD auger	Top of Casing Elevation	637.49 feet MSL
Drill Rig Type	Felling F-7	Drilling Contractor	Lahti Drilling	Total Depth	24.0 feet
Groundwater Depth and Date Measured	Not measured	Sampler Type	2 x 24-inch split spoon	Hammer Data	140 lbs, 30-inch drop
Diameter of Hole (inches)	5	Diameter of Well (inches)	2	Type of Well Casing	Schedule 40 PVC
Type of Sand Pack	Filter sand	Type/Depth of Seal(s)	Bentonite 8 ft to surface	Screen Perforation	0.010-inch slot
Comments See site plan for location.					

Elevation, feet	Depth, feet	SAMPLES					MATERIAL DESCRIPTION	Piezometer Completion Log	REMARKS
		Type	Number	Recovery, inches	Blows per 6 inches (SPT N)	Headspace HNu, ppmv			
635	0						[Borehole drilled to 5 feet without sampling.]		Cloudy, calm, 18° during drilling.
630	5		1	15	8-9-10-11 (19)	0	Very stiff, moist, mottled brown and gray CLAY, with trace silty sand, trace organic material [Lacustrine].		
625	10		2	24	10-12-13-15 (25)	0	Becomes brown, with some gray silty sand, no organic material.		
620	15		3	24	10-12-15-17 (27)	0	Becomes brown to gray.		
615	20		4	24	12-14-26-28 (40)	0	Hard, moist, gray CLAY, with some silt and fine sand (Till).		
610	25						Bottom of boring at 24.0 feet.		

Woodward-Clyde Consultants

DETP02

Project: Detrex Corporation
 Project Location: Ashtabula, Ohio
 Project Number: 5E06680

Log of Boring DETDP03

Sheet 1 of 1

Date(s) Drilled	1/30/97	Logged By	R. Fabian	Checked By	N. Sauer
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	2-1/4-Inch-ID / 5-Inch-OD auger	Top of Casing Elevation	636.03 feet MSL
Drill Rig Type	Falling F-7	Drilling Contractor	Lahti Drilling	Total Depth	24.0 feet
Groundwater Depth and Date Measured	Not measured	Sampler Type	2 x 24-inch split spoon	Hammer Data	140 lbs, 30-inch drop
Diameter of Hole (inches)	5	Diameter of Well (inches)	2	Type of Well Casing	Schedule 40 PVC
Type of Sand Pack	Filter sand	Type/Depth of Seal(s)	Bentonite 6 ft to surface	Screen Perforation	0.010-Inch slot
Comments See site plan for location.					

Elevation, feet	Depth, feet	SAMPLES					MATERIAL DESCRIPTION	Piezometer Completion Log	REMARKS
		Type	Number	Recovery, inches	Blows per 6 inches (SPT N)	Headspace H ₂ O, ppmv			
0	0						(Borehole drilled to 5 feet without sampling.)		Cloudy, calm, 18° during drilling.
630	5		1	24	12-12-12-15 (24)	0	Very stiff, moist, brown CLAY, with some fine sand and fine gravel, some organic material (Lacustrine). Very stiff, moist, gray CLAY, with some silty sand.		
625	10		2	24	6-7-13-15 (20)	0	With some fine sand. Becomes brown, with trace fine sand.		
620	15		3	18	6-6-13-12 (19)	0	Medium dense, moist, gray, silty SAND, with some clay.		
615	20		4	20	5-5-6-10 (11)	0	Becomes wet. Stiff, wet, gray CLAY, with some silt and fine sand (Till).		Boring sampled to 22 ft, then augered to 24 ft for piezometer installation.
610	25						Bottom of boring at 24.0 feet.		

Project: Detrex Corporation
 Project Location: Ashtabula, Ohio
 Project Number: 5E06680

Log of Boring DETDP04

Sheet 1 of 1

Date(s) Drilled	1/30/97	Logged By	R. Fabian	Checked By	N. Sauer
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	2-1/4-inch-ID / 5-inch-OD auger	Top of Casing Elevation	637.12 feet MSL
Drill Rig Type	Falling F-7	Drilling Contractor	Lahti Drilling	Total Depth	24.0 feet
Groundwater Depth and Date Measured	Not measured	Sampler Type	2 x 24-inch split spoon	Hammer Data	140 lbs, 30-inch drop
Diameter of Hole (inches)	5	Diameter of Well (inches)	2	Type of Well Casing	Schedule 40 PVC
Type of Sand Pack	Filter sand	Type/Depth of Seal(s)	Bentonite 6-4 ft, bentonite grout 4 ft to surface		
Comments	See site plan for location.				

Elevation, feet	Depth, feet	SAMPLES					Piezometer Completion Log	REMARKS
		Type	Number	Recovery, inches	Blows per 6 inches (SPT N)	Headspace HNU, ppmv		
0	0							Cloudy, calm, 18° during drilling.
[Borehole drilled to 5 feet without sampling.]								
630	5	1	18	11-12-13-13 (25)	20			Very stiff, moist, brown CLAY, with organic material (Lacustrine). Very stiff, moist, brown CLAY, with trace fine sand.
625	10	2	16	7-7-9-18 (16)	30			Becomes gray, with some fine sand. Becomes brown, with some sand and fine gravel.
620	15	3	15	5-5-7-8 (12)	40			Stiff, moist, gray CLAY (Till).
615	20	4	18	10-12-15-18 (27)	0			Becomes very stiff. <i>possible fill</i> <i>2 ft</i>
610	25							Bottom of boring at 24.0 feet.

Project: Detrex Corporation
 Project Location: Ashtabula, Ohio
 Project Number: 5E06680

Log of Boring DETDP05

Sheet 1 of 1

Date(s) Drilled	1/31/97	Logged By	R. Fabian	Checked By	M. Sauer
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	2-1/4-Inch-ID / 5-Inch-OD auger	Top of Casing Elevation	636.11 feet MSL
Drill Rig Type	Falling F-7	Drilling Contractor	Lahti Drilling	Total Depth	24.0 feet
Groundwater Depth and Date Measured	Not measured	Sampler Type	2 x 24-inch split spoon	Hammer Data	140 lbs, 30-inch drop
Diameter of Hole (inches)	5	Diameter of Well (inches)	2	Type of Well Casing	Schedule 40 PVC
Type of Sand Pack	Filter sand	Type/Depth of Seal(s)	Bentonite 6 ft to surface	Screen Perforation	0.010-inch slot
Comments See site plan for location.					

Elevation, feet	Depth, feet	SAMPLES					MATERIAL DESCRIPTION	Piezometer Completion Log	REMARKS
		Type	Number	Recovery, inches	Blows per 6 inches (SPT N)	Headspace H ₂ O, ppmv			
0	0						[Borehole drilled to 5 feet without sampling.]		Cloudy, 34° during drilling.
630	5	1	12	12-14-12-17 (28)	0		Very stiff, moist, mottled brown CLAY, some gravel, trace organic material (Lacustrine).		
625	10	2	15	10-11-12-15 (23)	10		Very stiff, moist, brown, silty CLAY.		
620	15	3	24	8-10-9-12 (19)	20		With trace fine sand.		
615	20	4	24	8-7-9-12 (18)	2		With trace silt, no sand.		
610									
25							Bottom of boring at 24.0 feet.		Boring sampled to 22 ft, then augered to 24 ft for piezometer installation.

2/14/97 1WLTJ3 DTYE

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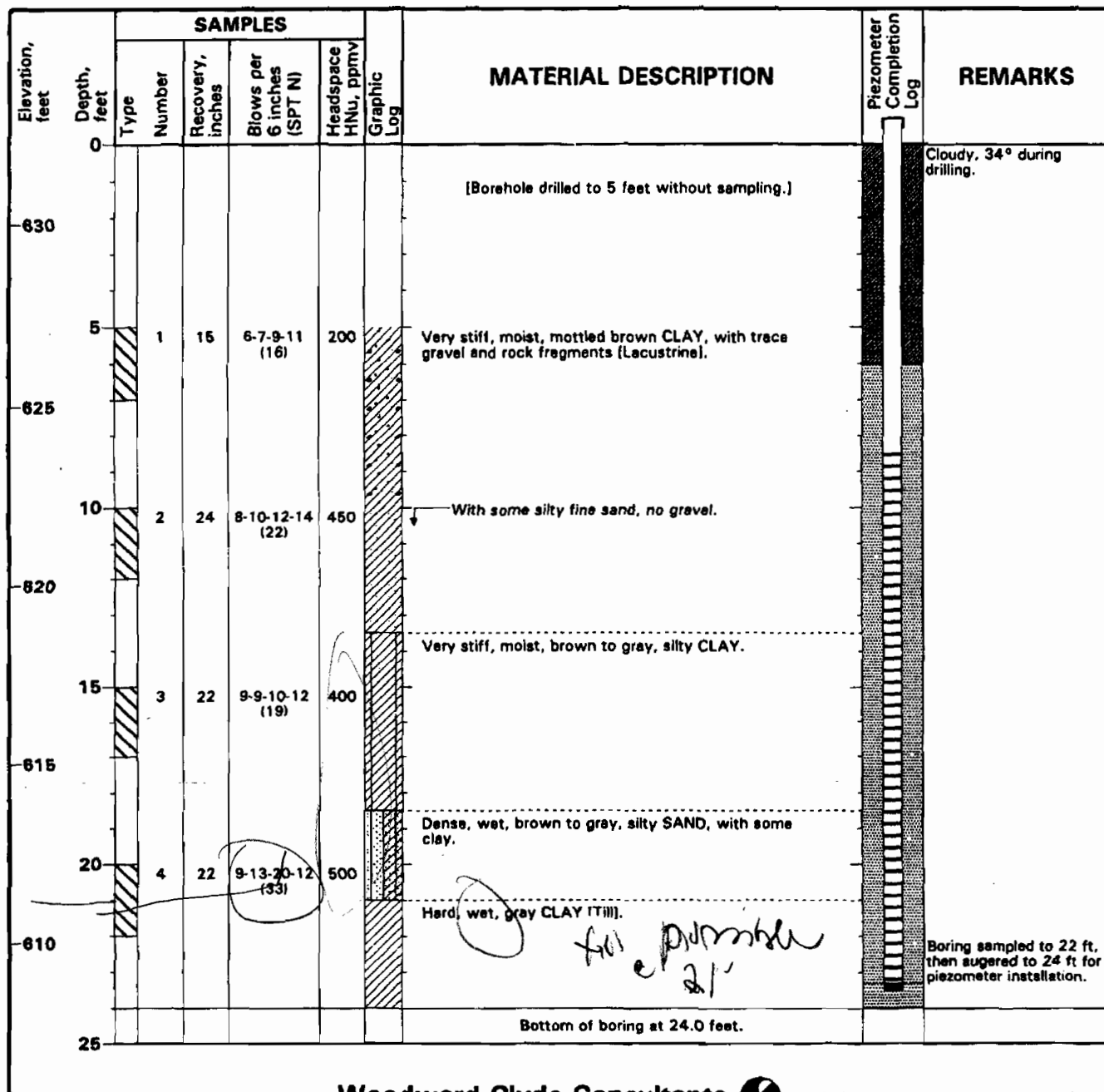
DETDP05

Project: Detrex Corporation
Project Location: Ashtabula, Ohio
Project Number: 5E06680

Log of Boring DETDP06

Sheet 1 of 1

Dates/Drilled	1/31/97	Logged By	R. Fabian	Checked By	N. Sauer
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	2-1/4-Inch-ID / 5-Inch-OD auger	Top of Casing Elevation	634.74 feet MSL
Drill Rig Type	Falling F-7	Drilling Contractor	Lehti Drilling	Total Depth	24.0 feet
Groundwater Depth and Date Measured	Not measured	Sampler Type	2 x 24-inch split spoon	Hammer Data	140 lbs, 30-inch drop
Diameter of Hole (inches)	5	Diameter of Well (inches)	2	Type of Well Casing	Schedule 40 PVC
Type of Sand Pack	Filter sand	Type/Depth of Seals	Bentonite 6 ft to surface	Screen Perforation	0.010-inch slot
Comments	See site plan for location.				



Woodward-Clyde Consultants

DETDP06

Project: Detrex Delineation

Project Location: 1100 State Road, Ashtabula, OH

Project Number: 13811443.09402

Log of Boring DPT-1/0209

Sheet 1 of 1

Date(s) Drilled	11/20/09	Logged By	A. Heitger	Checked By	M. Koss
Drilling Method	Direct Push	Drill Bit Size/Type	2.25" OD Macrocore Sampler	Total Depth of Borehole	20.0 feet
Drill Rig Type	Geoprobe 7720 DT	Drilling Contractor	Stock Drilling	Surface Elevation	
Groundwater Level and Date Measured	Approximately 7.0' bgs ATD	Sampler Types	5' Macrocore Sampler	Boring Completion	Bentonite chips and cuttings
Coordinate Location		Boring Location			

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm			
0					0.0		Medium stiff, moist, brown, silty CLAY (CL-ML) with dark brown organics and roots	
			DP-1	60	0.0		Medium stiff, moist, orange brown and gray mottled, silty CLAY (CL-ML)	
							↙ silt content increases, moisture and organic content decreases	
					0.0		↙ becomes stiff, silt content increases	
5					5.2			Sample from 5.0 to 6.0 feet bgs submitted for laboratory analysis.
			DP-2	60	4.4		Medium dense, wet, orange brown, sandy SILT (ML)	
							↙ becomes moist, with stiff, brown, clay	
					4.4			Sample from 8.0 to 10.0 feet bgs submitted for laboratory analysis.
10					0.2		Medium stiff, moist, gray, lean CLAY (CL) with silt, trace black shale fragments and sand	
							↙ shale fragments and sand content decreases	
			DP-3	60	0.8		Medium dense, wet, gray, silty SAND (SM) with clay	
					0.7		↙ silt content increases, with stiff, varved, silty clay and fine silty sand	
15					0.8			
			DP-4	54	1.1		Stiff, moist, gray, silty CLAY (CL-ML) with black shale fragments [TILL]	
					2.1			
20							End of Boring at 20' bgs	
25								

Report: GEOPROBE_5FT_LINER_SB: File: DETREX DELINEATION DPT1-DPT14.GPJ: 1/13/2010 DPT-1/0209

URS

Project: Detrex Delineation
 Project Location: 1100 State Road, Ashtabula, OH
 Project Number: 13811443.09402

Log of Boring DPT-2/0209

Sheet 1 of 1

Date(s) Drilled	11/20/09	Logged By	A. Heitger	Checked By	M. Koss
Drilling Method	Direct Push	Drill Bit Size/Type	2.25" OD Macrocore Sampler	Total Depth of Borehole	25.0 feet
Drill Rig Type	Geoprobe 7720 DT	Drilling Contractor	Stock Drilling	Surface Elevation	
Groundwater Level and Date Measured	Approximately 10.0' bgs ATD	Sampler Types	5' Macrocore Sampler	Boring Completion	Bentonite chips and cuttings
Coordinate Location		Boring Location			

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm			
0							Medium stiff, moist, light brown, silty CLAY (CL-ML)	
			DP-1	56	59.3		Medium stiff, moist, light orange brown and gray mottled, silty CLAY (CL-ML) with slight chemical odor	
					647		↙ silt content increasing with depth	
					3771		↘ moisture and sand content increased, silt content decreased	
5			DP-2	60	7748		↙ strong chemical odor	Sample from 5.0 to 6.0 feet bgs submitted for laboratory analysis.
					4587		↙ becomes stiff, brown, mottling decreases	
					4982		Medium stiff, gray, moist, silty CLAY (CL-ML) trace sand and gray shale fragments	
							↙ with sand seams	
10			DP-3	60	6408		Dense, wet, gray, silty SAND (SM) with DNAPL	Sample from 10.0 to 12.0 feet bgs submitted for laboratory analysis.
					3313		↙ becomes medium dense, silt content decreases	
					210		↘ alternating silty sand and varved silty clay	
15			DP-4	48	318		Medium stiff, moist, gray, fine sandy CLAY (CL)	
					148		↙ Medium dense, wet, gray, silty SAND (SM)	
					23.0		↙ becomes moist	
							↘ alternating silty sand and varved silty clay	
20			DP-5	40	188		Stiff, moist, gray, silty CLAY (CL-ML) with shale fragments, trace coarse sand	
					39.9			
					21.1		↙ with large shale fragments	
25							End of Boring at 25' bgs	no fill <

Report: GEOPROBE_5FT_LINER_SB; File: DETREX DELINEATION_DPT1-DPT4.GPJ; 1/13/2010 DPT-2/0209

URS

Project: Detrex Delineation

Project Location: 1100 State Road, Ashtabula, OH

Project Number: 13811443.09402

Log of Boring DPT-3/0209

Sheet 1 of 1

Date(s) Drilled	11/19/09	Logged By	A. Heitger	Checked By	M. Koss
Drilling Method	Direct Push	Drill Bit Size/Type	2.25" OD Macrocore Sampler	Total Depth of Borehole	15.0 feet
Drill Rig Type	Geoprobe 7720 DT	Drilling Contractor	Stock Drilling	Surface Elevation	
Groundwater Level and Date Measured	Approximately 5.0' bgs ATD	Sampler Types	5' Macrocore Sampler	Top of Casing Elevation	
Coordinate Location		Boring Location			

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Well details	FIELD NOTES AND WELL DETAILS
		Type	Number	Recovery, inches	Headspace, ppm				
0							GRASS / TOPSOIL		
			DP-1	55	127		Medium stiff, moist, brown and gray, silty CLAY (CL-ML) with fine gravel		
					2756		becomes gray with trace rock fragments		1-inch SCH 40 PVC riser
5			DP-2	58	2258		Loose, wet, dark brown and black, clayey SAND (SC) with white PVC fragments and DNAPL		No samples submitted due to presence of DNAPL
					3556		Medium dense, moist, gray, SILT (ML) with organics and white PVC fragments, trace DNAPL		
					2339		Loose, wet, dark brown and black, clayey silty SAND (SM) with white PVC fragments and DNAPL		
					2585		Medium dense, moist, gray, SILT (ML), with organics and white PVC fragments, trace DNAPL		
10			DP-3	60	2431		Loose, wet, black, coarse SAND (SP) with silt and DNAPL		#5 Filter sand
					2913		Medium stiff to soft, moist, gray, silty CLAY (CL-ML) with rock fragments, trace fine sand		1-inch SCH 40 PVC 0.010-slotted screen
					1206				
15							End of Boring at 15' bgs		
							no till		
20									

Report: GEOPROBE_5FT_LINER_WELL; File: DETREX DELINEATION_DPT1-DPT14.GPJ; 1/13/2010 DPT-3/0209

URS

Project: Detrex Delineation

Project Location: 1100 State Road, Ashtabula, OH

Project Number: 13811443.09402

Log of Boring DPT-6/0209

Sheet 1 of 1

Date(s) Drilled	11/23/09	Logged By	A. Heitger	Checked By	M. Koss
Drilling Method	Direct Push	Drill Bit Size/Type	2.25" OD Macrocore Sampler	Total Depth of Borehole	25.0 feet
Drill Rig Type	Geoprobe 7720 DT	Drilling Contractor	Stock Drilling	Surface Elevation	
Groundwater Level and Date Measured	Approximately 11.0' bgs ATD	Sampler Types	5' Macrocore Sampler	Boring Completion	Bentonite chips and cuttings
Coordinate Location		Boring Location			

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm			
0					0.0		REEDS / TOPSOIL	
			DP-1	56	0.3		Medium stiff, moist, orange brown and gray mottled, sandy silty CLAY (CL-ML)	
					1.9		← Medium dense, moist, brown, sandy clayey SILT (ML) ~4" layer	
5			DP-2	60	2.0		Medium dense, moist, brown and gray, sandy clayey SILT (ML)	
					2.6		Medium stiff, moist, gray, silty CLAY (CL-ML) with fine sand, trace fine gravel	
10			DP-3	52	3.8		← with seams of wet, silt and fine sand	
					4.5		Medium dense, moist, gray, clayey sandy SILT (ML) trace fine gravel	Sample from 12.0 to 14.0 feet bgs submitted for laboratory analysis.
					4.9		Medium stiff, moist, gray, silty CLAY (CL-ML) with fine sand, trace fine gravel	
15			DP-4	0	N/A		← Loose, wet, gray, coarse SAND (SW) with fine gravel ~1/4" seam	Sample from 14.0 to 15.0 feet bgs submitted for laboratory analysis.
20			DP-5	60	21		Stiff, moist, gray, silty CLAY (CL-ML) with fine gravel and shale fragments, trace sand [TILL]	
					3.6			
					4.1			
25							End of Boring at 25' bgs	

Report: GEOPROBE 5FT LINER_SB; File: DETREX DELINEATION_DPT1-DPT14.GPJ; 1/13/2010 DPT-6/0209

URS

Project: Detrex Delineation

Project Location: 1100 State Road, Ashtabula, OH

Project Number: 13811443.09402

Log of Boring DPT-7/0209

Sheet 1 of 1

Date(s) Drilled	11/20/09	Logged By	A. Heltger	Checked By	M. Koss
Drilling Method	Direct Push	Drill Bit Size/Type	2.25" OD Macrocore Sampler	Total Depth of Borehole	25.0 feet
Drill Rig Type	Geoprobe 7720 DT	Drilling Contractor	Stock Drilling	Surface Elevation	
Groundwater Level and Date Measured	Approximately 17.0' bgs ATD	Sampler Types	5' Macrocore Sampler	Top of Casing Elevation	
Coordinate Location	Boring Location				

Elevation, feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Well details	FIELD NOTES AND WELL DETAILS
		Type	Number	Recovery, inches	Headspace, ppm	Graphic Log		
0					3994			
			DP-1	60	2295			
					1622			
5			DP-2	60	1039			
					1417			
					1472			
10			DP-3	60	1773			
					1908			
					1329			
15			DP-4	55	1208			
					771			
					261			
20			DP-5	45	N/A			
25								

URS

Project: Detrex Delineation
 Project Location: 1100 State Road, Ashtabula, OH
 Project Number: 13811443.09402

Log of Boring DPT-9/0209

Sheet 1 of 1

Date(s) Drilled	11/24/09	Logged By	A. Heitger	Checked By	M. Koss
Drilling Method	Direct Push	Drill Bit Size/Type	2.25" OD Macrocore Sampler	Total Depth of Borehole	25.0 feet
Drill Rig Type	Geoprobe 7720 DT	Drilling Contractor	Stock Drilling	Surface Elevation	
Groundwater Level and Date Measured	Approximately 10.0' bgs ATD	Sampler Types	5' Macrocore Sampler	Top of Casing Elevation	
Coordinate Location	Boring Location				

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Well details	FIELD NOTES AND WELL DETAILS
		Type	Number	Recovery, inches	Headspace, ppm				
0							REEDS / TOPSOIL		
			DP-1	52	8.9		Soft, moist, orange brown and gray, sandy silty CLAY (CL-ML) with dark brown mottling becomes medium stiff		
					44.6				
5			DP-2	58	568		silt content increases becomes soft, with slight chemical odor Medium dense, moist, brown, sandy clayey SILT (ML) ~3" layer	1-inch SCH 40 PVC riser	
					4101				
					5997				Sample from 8.0 to 10.0 feet bgs submitted for laboratory analysis.
10			DP-3	60	843		Medium dense, moist, brown and gray, sandy SILT (ML) becomes wet, and with chemical odor		
					18.4		Medium stiff, moist, brown and gray, silty CLAY (CL-ML) with fine gravel and rock fragments, trace sand becomes gray with fine sand and silt varving	#5 Filter sand	
15			DP-4	60	88.1		Very soft, wet, gray, silty sandy CLAY (CL-ML)		
					12.1		Medium stiff, moist, brown and gray, silty CLAY (CL-ML) with fine gravel and rock fragments, trace sand with dry sand and moist silt varving	1-inch SCH 40 PVC 0.010-slotted screen	
					4.1				
20			DP-5	46	12.1		Very soft, moist, brownish gray, silty CLAY (CL-ML)		
					5.9		becomes medium stiff		Sample from 22.0 to 24.0 feet bgs submitted for laboratory analysis.
					8.9		Stiff, moist, gray, silty CLAY (CL-ML) with fine shale fragments and gravel, trace sand [TILL]		
25							End of Boring at 25' bgs		

Report: GEOPROBE_5FT_LINER_WELL; File: DETREX DELINEATION_DPT1-DPT14.GPJ; 1/13/2010 DPT-9/0209

URS

Project: Detrex Delineation

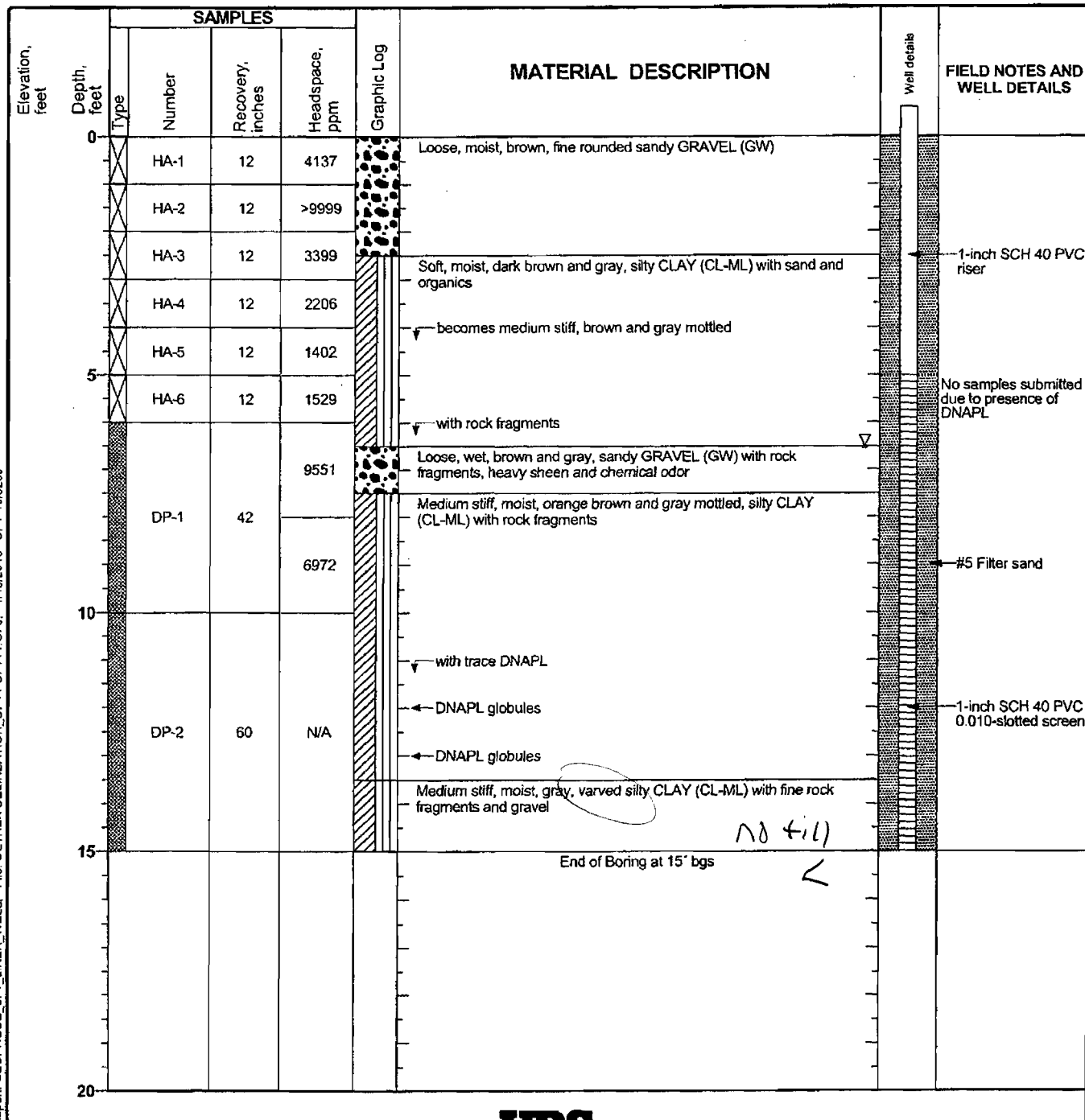
Project Location: 1100 State Road, Ashtabula, OH

Project Number: 13811443.09402

Log of Boring DPT-10/0209

Sheet 1 of 1

Date(s) Drilled	11/24/09	Logged By	A. Heitger	Checked By	M. Koss
Drilling Method	Direct Push	Drill Bit Size/Type	2.25" OD Macrocore Sampler	Total Depth of Borehole	15.0 feet
Drill Rig Type	Geoprobe 7720 DT	Drilling Contractor	Stock Drilling	Surface Elevation	
Groundwater Level and Date Measured	Approximately 6.5' bgs ATD	Sampler Types	5' Macrocore Sampler	Top of Casing Elevation	
Coordinate Location		Boring Location			



Project: Detrex Delineation

Project Location: 1100 State Road, Ashtabula, OH

Project Number: 13811443.09402

Log of Boring DPT-11/0209

Sheet 1 of 1

Date(s) Drilled	11/24/09	Logged By	A. Heitger	Checked By	M. Koss
Drilling Method	Direct Push	Drill Bit Size/Type	2.25" OD Macrocore Sampler	Total Depth of Borehole	25.0 feet
Drill Rig Type	Geoprobe 7720 DT	Drilling Contractor	Stock Drilling	Surface Elevation	
Groundwater Level and Date Measured	Approximately 7.5' bgs ATD	Sampler Types	5' Macrocore Sampler	Boring Completion	Bentonite chips and cuttings
Coordinate Location		Boring Location			

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm			
0			HA-1	12	N/A		GRASS / TOPSOIL	
			HA-2	12	N/A		Medium stiff, moist, orange brown and gray, silty CLAY (CL-ML)	
			HA-3	12	N/A			
			HA-4	12	N/A			
			HA-5	12	N/A			Samples from 0.0 to 5.0 feet bgs saturated with surface water unable to screen headspace
5			HA-6	12	611		Loose, wet, brown, clayey sandy GRAVEL (GW)	
							Medium stiff, moist, brown and gray, silty CLAY (CL-ML) trace sand	
			DP-1	48	1802		← Medium dense, wet, brown, sandy SILT (ML) ~4" layer	
					4725			
10							← becomes brown, silt content increases	Sample from 10.0 to 12.0 feet bgs submitted for laboratory analysis.
			DP-2	60	4783			
					4776			Duplicate Sample submitted from 10.0 to 12.0 feet bgs for laboratory analysis.
					1252		Medium stiff, moist, gray, silty CLAY (CL-ML) trace fine sand and gravel	
15					296		Medium dense, wet, gray, sandy SILT (ML)	
			DP-3	60	7.0			
					2.1		Medium dense, moist, gray, sandy clayey SILT (ML)	
20					28.6		Medium stiff, moist, gray, sandy silty CLAY (CL-ML)	Sample from 20.0 to 22.0 feet bgs submitted for laboratory analysis.
			DP-4	40	13.0		Stiff, moist, gray, silty CLAY (CL-ML) with fine shale fragments and gravel, trace sand [TILL]	
					6.7			
25							End of Boring at 25' bgs	

URS

Project: Detrex Delineation

Project Location: 1100 State Road, Ashtabula, OH

Project Number: 13811443.09402

Log of Boring DPT-12/0209

Sheet 1 of 1

Date(s) Drilled	12/10/09 and 12/11/09	Logged By	A. Heitger	Checked By	M. Koss
Drilling Method	Direct Push	Drill Bit Size/Type	2.25" OD Macrocore Sampler	Total Depth of Borehole	25.0 feet
Drill Rig Type	Geoprobe 7720 DT	Drilling Contractor	Stock Drilling	Surface Elevation	
Groundwater Level and Date Measured	Approximately 18.0' bgs ATD	Sampler Types	5' Macrocore Sampler	Boring Completion	Bentonite chips and cuttings
Coordinate Location		Boring Location			

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm			
0							ASPHALT	
			HA-1	0	N/A		Loose to medium dense, wet, gray, silty GRAVEL (GW) with sand	
			HA-4	12	1530		Medium stiff, moist, grayish brown, silty CLAY (CL-ML) trace gravel	
			HA-5	12	1246		← becomes brown	
5			HA-6	12	1026			
					1515			
			DP-1	48	>9999		← silt content increases	Sample from 8.0 to 10.0 feet bgs submitted for laboratory analysis.
10					3039			
			DP-2	46	780			
					452		Medium stiff, moist, gray, silty CLAY (CL-ML) with rock fragments, trace fine sand	
15					1495			
			DP-3	50	>9999		Medium dense, wet, gray, sandy SILT (ML) with chemical odor and sheen	Sample from 16.0 to 18.0 feet bgs submitted for laboratory analysis.
20							← dark brown to black DNAPL ~3" layer	
			DP-4	60	N/A		Stiff, moist, gray, silty CLAY (CL-ML) with fine shale fragments and gravel, trace sand [TILL]	
25							End of Boring at 25' bgs	

Project: Detrex Delineation

Project Location: 1100 State Road, Ashtabula, OH

Project Number: 13811443.09402

Log of Boring DPT-13/0209

Sheet 1 of 1

Date(s) Drilled	11/24/09 and 12/11/09	Logged By	A. Heitger	Checked By	M. Koss
Drilling Method	Direct Push	Drill Bit Size/Type	2.25" OD Macrocore Sampler	Total Depth of Borehole	25.0 feet
Drill Rig Type	Geoprobe 7720 DT	Drilling Contractor	Stock Drilling	Surface Elevation	
Groundwater Level and Date Measured	Approximately 9.25' bgs ATD	Sampler Types	5' Macrocore Sampler	Boring Completion	Bentonite chips and cuttings
Coordinate Location		Boring Location			

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm			
	0		HA-1	12	1.4		Loose, moist, dark brown, angular sandy GRAVEL (GW) trace clay	
			HA-2	12	0.0		Soft, moist, dark brown and gray, silty CLAY (CL-ML) with sand and gravel	
			HA-3	12	0.0		without sand or gravel	
			HA-4	12	0.0		becomes medium stiff, trace rock fragments	
	5		HA-5	12	0.0			
			DP-1	60	7.6		Medium stiff, moist, orange brown and gray mottled, silty CLAY (CL-ML)	
					15.8		silt content increases	
	10		DP-2	56	497		Medium dense, wet, brown, sandy SILT (ML)	
					4998		Medium dense, wet, brownish gray, silty SAND (SM)	
					>9999		Medium dense, moist, brown, sandy clayey SILT (ML)	
	15		DP-3	60	3756		Medium stiff, moist, brown and gray, silty CLAY (CL-ML)	Sample from 13.0 to 15.0 feet bgs submitted for laboratory analysis.
					4830		with sand and silt layering	
	20		DP-4	60	278		Loose, wet, gray, silty SAND (SM)	
					271		Medium stiff, moist, gray, varved silty CLAY (CL-ML)	Sample from 21.0 to 23.0 feet bgs submitted for laboratory analysis.
					7.9		Stiff, moist, gray, silty CLAY (CL-ML) with fine shale fragments and gravel, trace sand [TILL]	
	25						End of Boring at 25' bgs	

Report: GEOPROBE_5FT_LINER_SB; File: DETREX DELINEATION_DPT1-DPT14.GPJ; 1/13/2010 DPT-13/0209

URS

Project: Detrex Delineation

Project Location: 1100 State Road, Ashtabula, OH

Project Number: 13811443.09402

Log of Boring DPT-14/0209

Sheet 1 of 1

Date(s) Drilled	11/24/09 and 12/10/09	Logged By	A. Heltger	Checked By	M. Koss
Drilling Method	Direct Push	Drill Bit Size/Type	2.25" OD Macrocore Sampler	Total Depth of Borehole	25.0 feet
Drill Rig Type	Geoprobe 7720 DT	Drilling Contractor	Stock Drilling	Surface Elevation	
Groundwater Level and Date Measured	Approximately 17.5' bgs ATD	Sampler Types	5' Macrocore Sampler	Boring Completion	Bentonite chips and cuttings
Coordinate Location		Boring Location			

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm			
0		HA-1	12	78.0			GRAVEL Loose, moist, brown, fine sandy GRAVEL (GW) with silt	
		HA-2	12	80.3			becomes fine to coarse, with clay	
		HA-3	12	50.3				
		HA-4	12	24.1			Medium stiff, moist, brown and gray mottled, silty CLAY, with organics	
		HA-5	12	187			trace gray mottling	
5		DP-1	60		459		moisture and silt content increases	
					4496		moisture content decreases	
					4966			Sample from 9.0 to 11.0 feet bgs submitted for laboratory analysis.
10		DP-2	52		4903		with rock fragments	
					4846		Medium stiff, moist, gray, silty CLAY (CL-ML) with rock fragments	
					1126			
15		DP-3	50		25.9		Medium dense, wet, gray, silty SAND (SM)	
					12.2		Soft, moist, gray, silty CLAY (CL-ML) trace sand and fine rock fragments	
					20.1		becomes medium stiff	
20		DP-4	51		7.1		Stiff, moist, gray, silty CLAY (CL-ML) with fine shale fragments and gravel, trace sand [TILL]	Sample from 21.0 to 23.0 feet bgs submitted for laboratory analysis.
25							End of Boring at 25' bgs	

Report: GEOPROBE_5FT_LINER_SB; File: DETREX DELINEATION_DPT1-DPT14.GPJ; 1/13/2010 DPT-14/0209

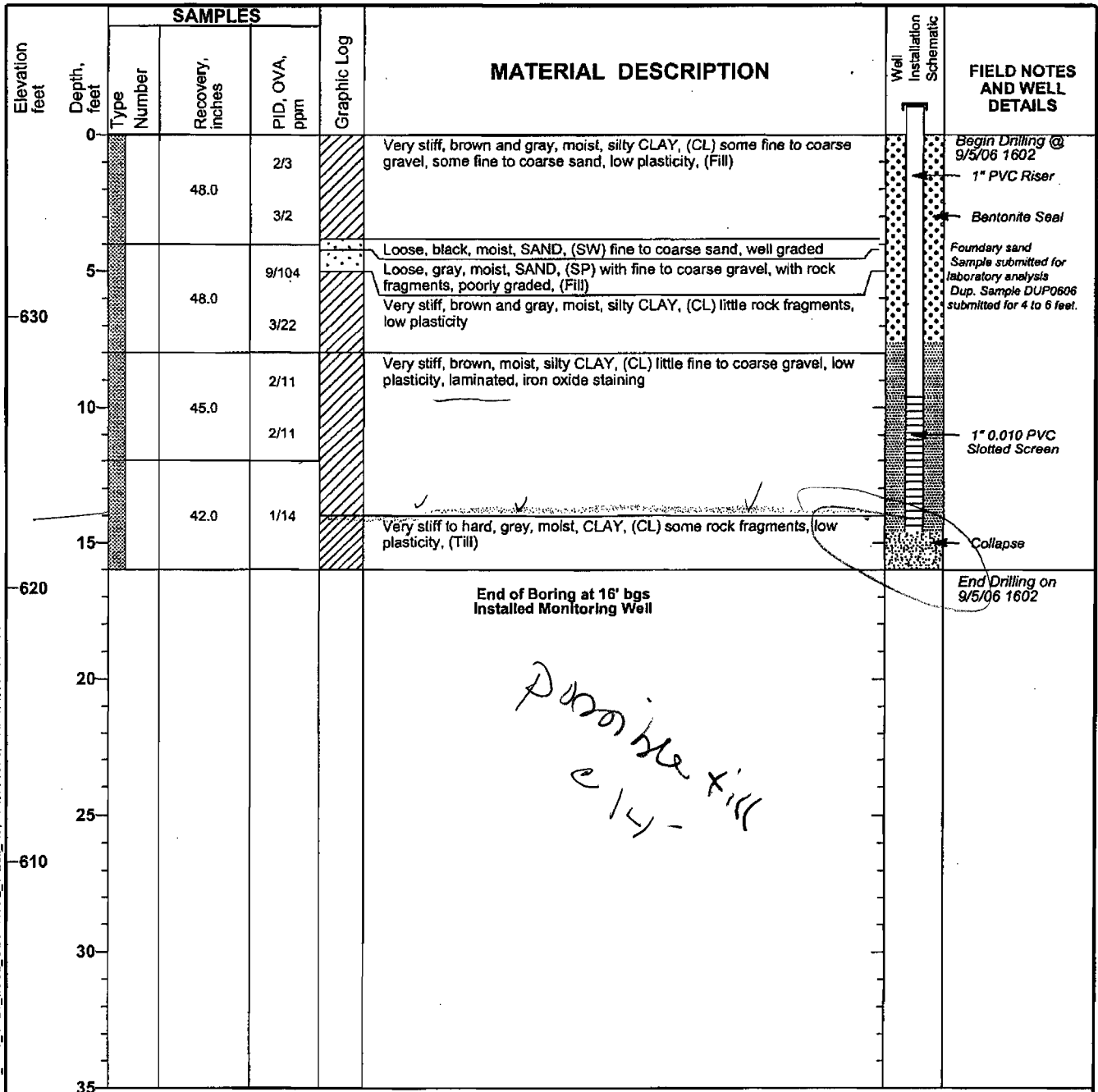
URS

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-02

Sheet 1 of 1

Date(s) Drilled	9/5/06 1602	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe geoprobe	Coordinates	817445.2056 2439017.07	Total Depth of Borehole	16.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	636.88'
Location	North of Detrex, between slurry wall and trench	Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	feet bgs on			Top of Casing Elevation	636.68



Report: 4_URS_CLEV_2006_GEOPROBE_WELL_XS; File: D.GPJ; 11/30/2006 DPT-02

URS

Project: Detrex - Detrex
 Project Location: North of Detrex, east of trench
 Project Number: 13811443

Log of Boring DPT-03

Sheet 1 of 1

Date(s) Drilled and Installed	9/6/06 0927	Geologist	J. Berk	Reviewer	D. Gray
Drilling Method	Geoprobe	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	16.00' bgs
Sampling Method	Macro-Core® sampler	Drill Bit Size/Type:	geoprobe	Approximate Surface Elevation	635.76'
Drill Rig Type:	Geoprobe 5400 bobcat mounted	Groundwater Level(s)		Hammer Data	
Boring Location:	1100 State Rd				

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type Number	Recovery, inches	PID, OVA, ppm				
	0						Hard, brown and gray, moist, CLAY, (CL) little rock fragments, trace sand, low plasticity, (Fill)	Begin drilling @ 9/6/06 0927
			45.0					
				2/1				
				4/3				
	5						Loose, black, moist, SAND, (SM) fine to medium grained, well graded, (Fill)	Foundary sand ()
630			42.0				Hard, brown and gray, moist, CLAY, (CL) little rock fragments, trace sand, low plasticity, (Fill)	
				4/15			Medium stiff, dark gray to black, moist, silty CLAY, (CL) some rock fragments, low plasticity, (Fill)	
				4/22			Soft, brown mottled dark gray, moist, silty CLAY, (CL) trace coarse gravel, medium plasticity, no staining, (Fill)	
	10		47.0				Stiff, brown mottled gray, moist, silty CLAY, (CL) trace fine gravel, medium plasticity, laminated	Sample submitted for laboratory analysis () Wet gravel and cobbles btw brown and gray clays.
				4/15				
				5/14				
	15		29.0				Stiff, brown, moist, silty CLAY, (CL) trace fine gravel, non plastic, laminated, iron oxide staining	
620				4/6			Medium stiff, gray, moist, CLAY, (CL) some rock fragments, low plasticity, homogeneous, (Till)	
				0/2				
							End of Boring at 16' bgs	End drilling on 9/6/06
	20							
	25							
610								
	30							
	35							

*Plastic till c 15.5' ?
limestone?*

Project: Detrex - Detrex
 Project Location: Outside slurry wall near well RMSMW05S
 Project Number: 13811443

Log of Boring DPT-04

Sheet 1 of 1

Date(s) Drilled and Installed	9/5/06 1503	Geologist	J. Berk	Reviewer	D. Gray
Drilling Method	Geoprobe	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	20.00' bgs
Sampling Method	Macro-Core® sampler	Drill Bit Size/Type	geoprobe	Approximate Surface Elevation	634.10'
Drill Rig Type	Geoprobe 5400 bobcat mounted	Groundwater Level(s)		Hammer Data	
Boring Location	1100 State Rd				

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	PID, OVA, ppm			
0					5/5		TOPSOIL	Begin drilling @ 9/5/06 1503
					6/8		CRUSHED STONE	
				43.0			Soft, black, moist, SILT, (ML) little rock fragments, non plastic	
630							Loose, brown, saturated, silty SAND, (SM) little medium to coarse gravel, fine to medium grained	
	5				1/6		Loose, brown, saturated, SAND, (SM) trace fine gravel, fine to medium grained	
				40.0			Loose, brown, saturated, SAND, (SM) some rock fragments, fine to medium grained	
					5/36		Soft, brown and gray, moist, silty CLAY, (CL) trace wood, medium plasticity, mottled, (Fill)	
					3/2		Medium stiff, brown and gray, moist, silty CLAY, (CL) trace fine gravel, medium plasticity, mottled	
	10				3/3			
				38.0				
					33/54		Very soft, gray, moist, silty CLAY, (CL) medium plasticity, homogeneous	Sample submitted for laboratory analysis () L high
620				45			Soft, brown, moist, silty SAND, (SP) fine grained	
	15				16/23			
					4/6		Medium stiff, gray and brown, moist, silty CLAY, (CL) trace fine to medium gravel, low plasticity, mottled	
				45			Loose, brown, saturated, silty SAND, (SP) fine grained	
					2/3		Medium stiff, gray, moist, silty CLAY, (CL) low plasticity, homogeneous	
	20						End of Boring at 20' bgs	End drilling on 9/5/06 1600
610								
	25							
	30							
600								
	35							

Report: 1_URS_CLEV_3COL_S_XS; File: D.GPJ; 11/30/2006 DPT-04

URS

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-05

Sheet 1 of 1

Date(s) Drilled	9/7/06 1545	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe geoprobe	Coordinates	817454.2806 2439186.22	Total Depth of Borehole	16.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	635.17'
Location	North of Detrex	Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	feet bgs on			Top of Casing Elevation	635.17

Elevation feet	Depth, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Well Installation Schematic	FIELD NOTES AND WELL DETAILS
		Type Number	Recovery, inches	PID, OVA, ppm				
	0					Stiff, brown and gray, moist, silty CLAY, (CL) little rock fragments, low plasticity, (Fill), Black silty clay w/cobbels @ 5-6 ft.		Begin Drilling @ 9/7/06 1545
			48	10/2 11/3				1" PVC Riser
								Bentonite Seal
-630	5		48	10/4 10/4		Very stiff, brown, moist, silty CLAY, (CL) trace fine gravel, non plastic		
	10		48	10/2 10/2				1" 0.010 PVC Slotted Screen
								Sample submitted for laboratory analysis
-620	15		38.0	5/2 9/3		Medium dense, light brown, dry, SAND, (SP) fine grained, iron oxide staining		
						Very stiff, brown, moist, silty CLAY, (CL) trace fine gravel, non plastic		Collapse
						End of Boring at 16' bgs Installed Monitoring Well		End Drilling on 9/7/06 1545
	20							
-610	25							
	30							
	35							

*Possible fill?
 @ 14.5'?*

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-06

Sheet 1 of 1

Date(s) Drilled	9/7/06 1453	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe geoprobe	Coordinates	817466.454 2439259.037	Total Depth of Borehole	20.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	634.76'
Location	North of Detrex	Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	feet bgs on			Top of Casing Elevation	634.76

Elevation feet	Depth, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Well Installation Schematic	FIELD NOTES AND WELL DETAILS
		Type Number	Recovery, inches	PID, OVA, ppm				
	0					TOPSOIL Soft, gray brown, moist, CLAY, (CL) some rock fragments, trace roots, medium plasticity, blocky, (Fill)		Begin Drilling @ 9/7/06 1453 1" PVC Riser
			48.0	3/1				Bentonite Seal
630	5		48.0	3/140 10/60				Sample submitted as MS/MSD
	10		47.0	3/70 2/39		Very silty, brown mottled gray, moist silty CLAY, (CL) trace fine gravel, low plasticity. Less gray and increasing gravel @ 13 feet.		1" 0.010 PVC Slotted Screen
620	15		40.0	2/8 3/11				Collapse
			48.0	not recorded		13' gravel		
	20					End of Boring at 20' bgs Installed Monitoring Well		End Drilling on 9/7/06 1453
610	25							
	30							
600	35							

Report: 1 URS CLEV 200L GEOPROBE_WELL.XS; File: DGPJ: 11/30/2006 DPT-06

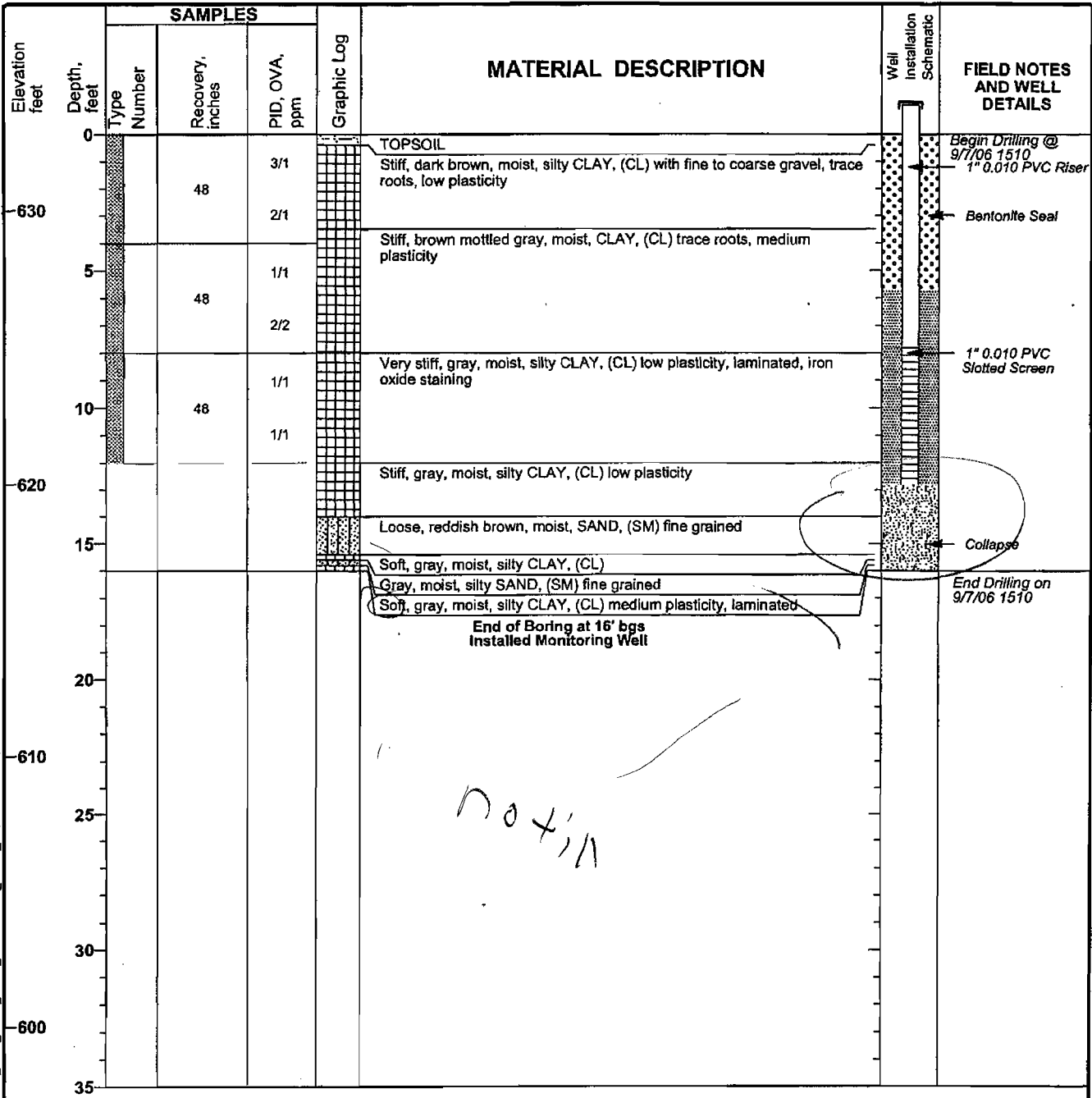
URS

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-07

Sheet 1 of 1

Date(s) Drilled	9/7/06 1510	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe geoprobe	Coordinates	817465.9465 2439340.065	Total Depth of Borehole	16.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	632.80'
Location	North of Detrex, west of drainage	Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	feet bgs on			Top of Casing Elevation	632.80



Report: 1_URS_CLEV_200L_GEOPROBE_WELL_XS; File: D.GPJ; 11/30/2006 DPT-07

URS

Project: Detrex - Detrex
 Project Location: North of Detrex, east of drainage.
 Project Number: 13811443

Log of Boring DPT-08

Sheet 1 of 1

Date(s) Drilled and Installed	9/7/06	Geologist	J. Berk	Reviewer	D. Gray
Drilling Method	Geoprobe	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	16.00' bgs
Sampling Method	Macro-Core® sampler	Drill Bit Size/Type	geoprobe	Approximate Surface Elevation	671.00'
Drill Rig Type	Geoprobe 5400 bobcat mounted	Groundwater Level(s)		Hammer Data	
Boring Location	1100 State Rd				

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	PID, OVA, ppm				
670	0							TOPSOIL	Begin drilling @ 9/7/06
				48	0/1			Stiff, dark brown, moist, silty CLAY, (CL) with fine to coarse gravel, trace roots, low plasticity	
					0/1				
	5			48	1/1			Stiff, brown mottled gray, moist, CLAY, (CL) trace roots, medium plasticity	
					1/1				
	10			48	1/1				Backfilled with bentonite ()
					1/1				
660				48	2/2				
	15				0/0				
								End of Boring at 16' bgs	End drilling on 9/7/06
	20								
650									
	25								
	30								
640									
	35								

Report: 1_URS_CLEV_3COL_S_XS; File: D.GPJ; 11/30/2006 DPT-08

URS

Project: Detrex - Detrex

Project Location: West of State Rd., south of creek.

Project Number: 13811443

Log of Boring DPT-09

Sheet 1 of 1

Date(s) Drilled and Installed	9/8/06 1112	Geologist	J. Berk	Reviewer	D. Gray
Drilling Method	Geoprobe	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	14.00' bgs
Sampling Method	Macro-Core® sampler	Drill Bit Size/Type:	geoprobe	Approximate Surface Elevation	626.93'
Drill Rig Type:	Geoprobe 5400 bobcat mounted	Groundwater Level(s)		Hammer Data	
Boring Location:	1100 State Rd				

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	PID, OVA, ppm			
	0						Medium stiff, dark brown, moist, silty CLAY, (CL) low plasticity	Begin drilling @ 9/8/06 1112
				45.0	0/1		Stiff, brown mottled gray, moist, silty CLAY, (CL) trace roots, low plasticity, no odor	Background ≈ 4 PID/7 FID ()
					0/1			
	5				0/0		Stiff, brown, moist, silty CLAY, (CL) trace fine gravel, low plasticity, no odor, Silty sand seams @ 4.5 and 6 feet, moist. Becomes hard w/Fe staining @ 6 ft.	
620				40.0	9/3			
							Soft, gray, moist, CLAY, (CL) little gravel, laminated, Silt lamina, moist.	
	10				4/1			
				35.0				
				24	9/1			
	15						End of Boring at 14' bgs	End drilling on 9/8/06 1203
610								
	20							
	25							
600								
	30							
	35							

Report: 1_URS_CLEV_3COL_S_XS; File: D.GPJ; 11/30/2006 DPT-09

URS

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-10

Sheet 1 of 1

Date(s) Drilled	9/8/06 0957	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe geoprobe	Coordinates	817250.2885 2438720.525	Total Depth of Borehole	16.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	627.54'
Location	West of State Rd., south of creek.	Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	feet bgs on			Top of Casing Elevation	627.54

Elevation feet	Depth, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Well Installation Schematic	FIELD NOTES AND WELL DETAILS
		Type Number	Recovery, inches	PID, OVA, ppm				
	0					TOPSOIL Soft, dark brown, moist, CLAY, (CL) low plasticity Medium stiff, brown mottled gray, moist, silty CLAY, (CL) trace coarse gravel, medium plasticity		Begin Drilling @ 9/8/06 0957 1" PVC Riser
	5		48.0	600		Soft, brown, wet, clayey SILT, (ML) coarse gravel, non plastic, 3ppm PID above sample. Stiff, gray mottled brown, moist, silty CLAY, (CL) trace coarse gravel, medium plasticity		1" 0.010 PVC Slotted Screen
-620	10		48	600		Medium stiff, gray, moist, silty CLAY, (CL) low plasticity, laminated Soft, brown and gray, wet, clayey SILT, (ML) non plastic, laminated		Sample submitted in duplicate as DUP0908
	15		48	300		Soft, gray, moist, silty CLAY, (CL) medium plasticity, laminated		Collapse
-610						End of Boring at 16' bgs Installed Monitoring Well		End Drilling on 9/8/06 0957
	20							
	25							
-600	30							
	35							

Report: 1_URS_CLEV_2001_GEOPROBE_WELL_XS; File: D.GPJ; 11/30/2006 DPT-10

URS

Project: Detrex - Detrex
 Project Location: West of State Rd., south of creek.
 Project Number: 13811443

Log of Boring DPT-11

Sheet 1 of 1

Date(s) Drilled and Installed	9/8/06 0918	Geologist	J. Berk	Reviewer	D. Gray
Drilling Method	Geoprobe	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	13.00' bgs
Sampling Method	Macro-Core® sampler	Drill Bit Size/Type:	geoprobe	Approximate Surface Elevation	628.20'
Drill Rig Type:	Geoprobe 5400 bobcat mounted	Groundwater Level(s)		Hammer Data	
Boring Location:	1100 State Rd				

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	PID, OVA, ppm			
0							TOPSOIL	Begin drilling @ 9/8/06 0918
				48.0	1/1		Soft, brown mottled gray, moist, silty CLAY, (CL) medium plasticity, Becomes stiff @ 3ft	
					6/1			
5				45.0	2/6		Very soft, brown, saturated, SILT, (ML) trace clay, non plastic	Sample submitted for laboratory analysis ()
					1/2		Medium stiff, brown mottled gray, moist, silty CLAY, (CL) medium plasticity	
-620					3/1		Soft, gray, moist, CLAY, (CL) medium plasticity, 0.1 ft silt seams @ approximately 12 ft. becomes silt @ 12.5 ft.	Background=37ppm PID 3 ppm FID ()
10				26.0	3/1			
				10.0	not analyzed			
15							End of Boring at 13' bgs	End drilling on 9/8/06 0930
-610								
20								
25								
-600								
30								
35								

URS

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-12

Sheet 1 of 1

Date(s) Drilled	8/29/06 1131	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe geoprobe	Coordinates	817211.3641 2438878.823	Total Depth of Borehole	27.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	632.41'
Location	Offset south to clear fence	Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	feet bgs on			Top of Casing Elevation	632.41

Elevation feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Well Installation Schematic	FIELD NOTES AND WELL DETAILS
		Type Number	Recovery, inches	PID, OVA, ppm	Graphic Log			
630	0					TOPSOIL		Begin Drilling @ 8/29/06 1131
			48	2/12		Soft, brown gray, moist, silty CLAY, (CL) some fine to coarse gravel, some fine to coarse sand, trace asphalt fragments, low plasticity, mottled		1" PVC Riser
				4/8		Medium stiff, light gray light gray, moist, silty CLAY, (CL) trace roots, low plasticity, mottled, (Fill)		Bentonite Seal
	5		48	3/12		Medium stiff, light gray light brown, moist, silty CLAY, (CL) trace fine to coarse gravel, low plasticity, mottled		
				5/8				
	10		24	1/11		Soft, light gray light brown, moist, silty CLAY, (CL) trace fine to coarse gravel, low plasticity, mottled		Water encountered at 8 feet. Chemical odor noted. May be from air release.
				4/6		Soft, light brown, silty SAND, (SP) trace manganese, fine grained, iron oxide staining		
620				3/6		Medium stiff, brown, silty CLAY, (CL)		1" 0.010 PVC Slotted Screen
			26.0	6/7		Medium stiff, gray, moist, silty CLAY, (CL) low plasticity		
				6/7		Gray, moist, silty CLAY, (CL) medium plasticity		
	15		33.0	6/15		Gray, moist, clayey SILT, (ML) some fine sand, non plastic, no staining		Collapse
				4/6				
	20		24.0	2/14		Gray, moist, clayey SILT, (ML) some fine sand, non plastic, no staining		
610				2/3000		Medium stiff, gray, moist, silty CLAY, (CL) little rock fragments, trace fine to coarse gravel, low plasticity, (till)		Sample submitted for laboratory analysis
				2/150		Stiff, gray, moist, silty CLAY, (CL) little rock fragments, trace fine to coarse gravel, low plasticity, (till)		~ Clear
	25		19.0					
	30					End of Boring at 27' bgs Installed Monitoring Well		End Drilling on 8/29/06 1131
600								
	35							

Report: I_URS_CLEV_2006_GEOPROBE_WELL_XS; File: D.GPJ; 11/30/2006 DPT-12

URS

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-13

Sheet 1 of 1

Date(s) Drilled	9/1/06 1750	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe geoprobe	Coordinates	817255.9791 2438936.709	Total Depth of Borehole	24.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	630.81'
Location	NW Corner of Detrex, on earth berm	Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	feet bgs on			Top of Casing Elevation	630.81

Elevation feet	Depth, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Well Installation Schematic	FIELD NOTES AND WELL DETAILS
		Type Number	Recovery, inches	PID, OVA, ppm				
630	0			25/2		Soft, light grayish brown, moist, clayey SILT, (ML/MH) trace organics, low plasticity, mottled, iron oxide staining		Begin Drilling @ 9/1/06 1750
				22/2				1" PVC Riser
								Bentonite Seal
	5			19/2		Medium stiff, light grayish brown, moist, clayey SILT, (ML) low plasticity, mottled, iron oxide staining		
				235/136				
				290/79		Medium stiff, light grayish brown, moist, clayey SILT, (ML) low plasticity, mottled		1" 0.010 PVC Slotted Screen
620	10			143/25		Medium stiff, light gray, moist, silty CLAY, (GM) trace rock fragments, medium plasticity		
				35/8		Soft, dark gray, very moist, clayey SILT, (ML) trace, low plasticity		
	15			23/6				Collapse
				35/6		Soft, light grayish brown, wet, clayey SILT, (ML) low plasticity		
				75/6				
610	20			37/10		Medium stiff, (ML)		
				23/10		Medium stiff, dark gray, moist, silty CLAY, (ML) trace rock fragments, low plasticity, (fill)		
	25					End of Boring at 24' bgs Installed Monitoring Well		End Drilling on 9/1/06 1750
						<i>Permit till 022</i>		
600	30							
	35							

Report: 1_URS_CLEV_2COL_GEOPROBE_WELL_XS; File: D.GPJ; 11/30/2006 DPT-13

URS

Project: Detrex - Detrex
 Project Location: NW Corner of Detrex
 Project Number: 13811443

Log of Boring DPT-14

Sheet 1 of 1

Date(s) Drilled and Installed	8/30/06 1422	Geologist	J. Berk	Reviewer	D. Gray
Drilling Method	Geoprobe	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	22.00' bgs
Sampling Method	Macro-Core® sampler	Drill Bit Size/Type:	geoprobe	Approximate Surface Elevation	632.34'
Drill Rig Type:	Geoprobe 5400 bobcat mounted	Groundwater Level(s)		Hammer Data	
Boring Location:	1100 State Rd				

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	PID, OVA, ppm			
630	0			48	43/4 31/2		TOPSOIL Stiff, dark gray, moist, silty CLAY, (CL) with organics, trace fine sand, non plastic, (Fill) Stiff, light brown gray, moist, silty CLAY, (CL) little manganese, laminated	Begin drilling @ 8/30/06 1422
	5			48.0	42/6 120/35		Stiff, brown, moist, silty CLAY, (CL) some manganese, laminated, iron oxide staining	
	10			48.0	20/15 320/100		Stiff, brown, moist, silty CLAY, (CL) some manganese, laminated, iron oxide staining Soft, brown, wet, clayey SILT, (ML) non plastic Stiff, brown, moist, silty CLAY, (CL) with fine sand, laminated, iron oxide staining	Sample submitted for laboratory analysis ()
620	15			48.0	10/4 14/6		Stiff, gray brown, moist, silty CLAY, (CL) low plasticity, laminated Soft, brown, very moist, silty CLAY, (CL) laminated, iron oxide staining Very soft, brown, wet, silty CLAY, (CL) little fine to coarse gravel, no staining	
	20			40.0	25/13 11/1		Stiff, gray, silty CLAY, (CL) laminated Very soft, gray, saturated, clayey SILT, (ML) some fine sand, non plastic	
610	25			20	15/5		Stiff, gray, silty CLAY, (CL) laminated	
	30						End of Boring at 22' bgs	End drilling on 8/30/06
600	35						no fill	

Report: 1 URS CLEV_3COL_S_XS; File: DGPJ; 11/30/2006 DPT-14

URS

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-15

Sheet 1 of 1

Date(s) Drilled	8/31/06 1327	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe geoprobe	Coordinates	817272.7806 2439046.003	Total Depth of Borehole	22.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	631.82'
Location	Along, North fence line	Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	feet bgs on			Top of Casing Elevation	631.82

Elevation feet	Depth, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Well Installation Schematic	FIELD NOTES AND WELL DETAILS
		Type Number	Recovery, inches	PID, OVA, ppm				
-630	0			30/1		TOPSOIL		Begin Drilling @ 8/31/06 1327
			48	16/2		Stiff, brown gray, moist, silty CLAY, (CL) low plasticity, mottled		Utility locator confirmed location was clear.
	5		48	34/5 700/70		Stiff, brown gray, moist, silty CLAY, (CL) low plasticity, mottled, iron oxide staining Stiff, brown, moist, silty CLAY, (CL) some rock fragments, low plasticity, mottled, iron oxide staining		Sample submitted for laboratory analysis.
	10		48	400/78 13/2		Soft, brown gray, very moist, silty CLAY, (CL) little fine sand, low plasticity, laminated, iron oxide staining Medium stiff, gray, moist, silty CLAY, (CL) medium plasticity		Background PID =0
-620	15		24	19/6 12/5	++ ++	Medium stiff, gray, very moist, silty CLAY, (CL) trace fine sand, medium plasticity Soft, gray, wet, clayey SILT, (ML) low plasticity, laminated Medium stiff, gray, very moist, silty CLAY, (CL) trace fine sand, medium plasticity		Breathing zone 0 ppm, 40 ppm in boring.
			24	8/3 4/3		Loose, gray, moist, silty SAND, (SM) fine grained Loose, gray, moist, silty SAND, (SM) fine grained Loose, gray, saturated, silty SAND, (SM) fine grained		PID=0 in breathing zone, 20 ppm in hole.
	20							Breathing zone PID=0 borehole =2 ppm Difficulties extracting sample liner. Lost bottom 2 feet of drilling on 8/31/06 1327
	25					End of Boring at 22' bgs Installed Monitoring Well		Breathing zone PID=0, boring =1 ppm.
-610	30							
	35							

Report: 1_URS_CLEV_200L_GEOPROBE_WELL_XS; File: D.GPJ; 11/30/2006 DPT-15

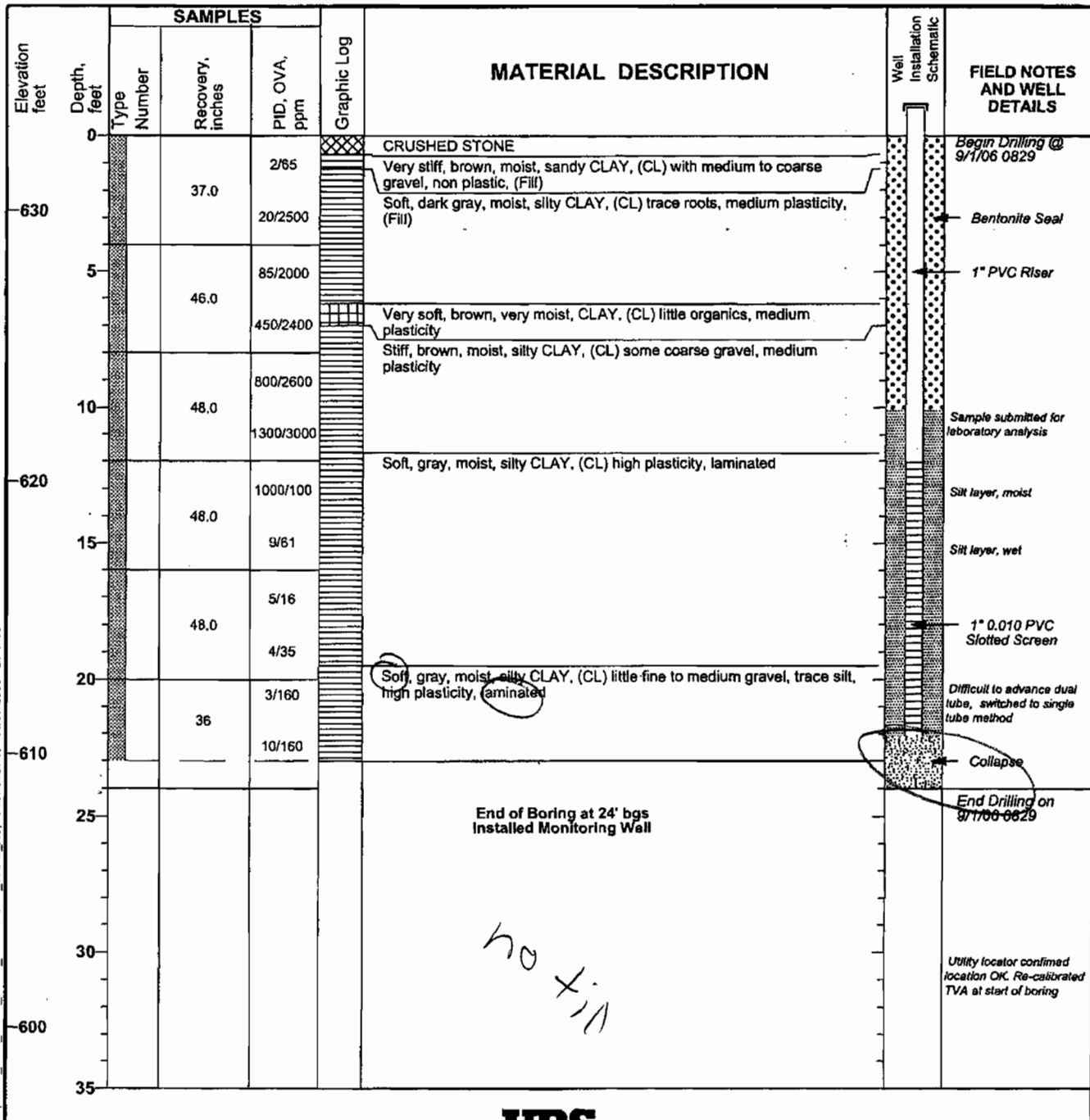
URS

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-16

Sheet 1 of 1

Date(s) Drilled	9/1/06 0829	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe geoprobe	Coordinates	817284.2088 2439146.277	Total Depth of Borehole	24.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	632.75'
Location	Along North fence line	Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	feet bgs on			Top of Casing Elevation	632.75



Report: 1 URS CLEV 200L GEOPROBE WELL.XS; File: D.GPJ; 11/30/2006 DPT-16

URS

Project: Detrex - Detrex

Project Location: Along. North fence line

Project Number: 13811443

Log of Boring DPT-17

Sheet 1 of 1

Date(s) Drilled and Installed	9/1/06	Geologist	M. Koss	Reviewer	D. Gray
Drilling Method	Geoprobe	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	26.00 ' bgs
Sampling Method	Macro-Core® sampler	Drill Bit Size/Type	geoprobe	Approximate Surface Elevation	~633'
Drill Rig Type	Geoprobe 5400 bobcat mounted	Groundwater Level(s)		Hammer Data	
Boring Location	1100 State Rd				

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type Number	Recovery, inches	PID, OVA, ppm				
	0			---			Medium stiff, light grayish brown, moist, clayey SILT, (ML) little rock fragments, mottled	Begin drilling @ 9/1/06
				6/4				
	5			8/2			Soft, dark gray, very moist, sandy FAT CLAY, (CL) trace clayey silt, trace coarse gravel, low plasticity	
				16/236			Soft, light brownish gray, moist, clayey SILT, (ML) trace rock fragments, low plasticity, mottled, iron oxide staining	
				48/197			Medium stiff, light grayish brown, moist, clayey SILT, (ML) trace rock fragments, low plasticity, mottled	
	10			266/172			Medium stiff, light brownish gray, moist, clayey SILT, (ML) low plasticity, mottled	
				460/110			Soft, light grayish brown, wet, clayey SILT, (ML) trace medium sand, low plasticity, mottled, iron oxide staining	
	15			47/8			Medium stiff, light gray, moist, silty CLAY, (CL) medium plasticity	
				20/5			Medium stiff, gray, very moist, clayey SILT, (ML) medium plasticity	
				22/20				
	20			10/10			Medium stiff, dark gray, moist, silty CLAY, (CL) trace rock fragments, medium plasticity	
				5/4			Stiff, dark gray, moist, silty CLAY, (CL) trace rock fragments, medium plasticity, (fill)	
	25			7/4				
							End of Boring at 26' bgs	End drilling on 9/1/06
	30						Possible fill @ 22'	
	35							

Report: 1_URS_CLEV_3COL_S.XS; File: D.GPJ; 11/30/2008 DPT-17

URS

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-18

Sheet 1 of 1

Date(s) Drilled	8/29/06 1533	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe geoprobe	Coordinates	817076.7446 2438946.428	Total Depth of Borehole	22.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	634.43'
Location	South end of slurry wall, 9 ft west of force main	Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	feet bgs on			Top of Casing Elevation	634.43

Elevation feet	Depth, feet	SAMPLES			Graphic Log	MATERIAL DESCRIPTION	Well Installation Schematic	FIELD NOTES AND WELL DETAILS
		Type Number	Recovery, inches	PID, OVA, ppm				
	0					TOPSOIL		Begin Drilling @ 8/29/06 1533
			40	0/1		Medium stiff, light gray brown, moist, silty CLAY, (CL) trace rock fragments, trace fine to coarse gravel, low plasticity, (Fill)		1" PVC Riser
				10/5		Medium stiff, light gray light brown, moist, silty CLAY, (CL) little fine to coarse gravel, low plasticity, mottled		Bentonite Seal
630	5		40	16/1		Medium stiff, light gray light brown, moist, silty CLAY, (CL) trace fine to coarse gravel, low plasticity, mottled, iron oxide staining		
				18/1				
	10		5	poor recovery		Medium stiff, light gray light brown, moist, silty CLAY, (CL) trace fine to coarse gravel, low plasticity, mottled, iron oxide staining		Poor recovery due to hole caving in.
						Medium stiff, light gray light brown, moist, silty CLAY, (CL) trace fine to coarse gravel, low plasticity, mottled, iron oxide staining		1" 0.010 PVC Slotted Screen
620	15		45	12/1		Soft, gray, moist to wet, silty CLAY, (CL) medium plasticity, homogeneous		
				15/2				
						Soft, gray, wet, silty CLAY, (CL) medium plasticity, homogeneous		Wet silt layer.
				19/1	++	Soft, gray, wet, clayey SILT, (ML) some fine sand, non plastic, homogeneous		Collapse
					++			
					++			
					++			
					++			
	20		24	19/17		Stiff, gray, moist, silty CLAY, (CL) with rock fragments, some fine to coarse gravel, medium plasticity, (Till)		Sample submitted for laboratory analysis
610	25					End of Boring at 22' bgs Installed Monitoring Well		End Drilling on 8/29/06 1533
	30							
600	35							

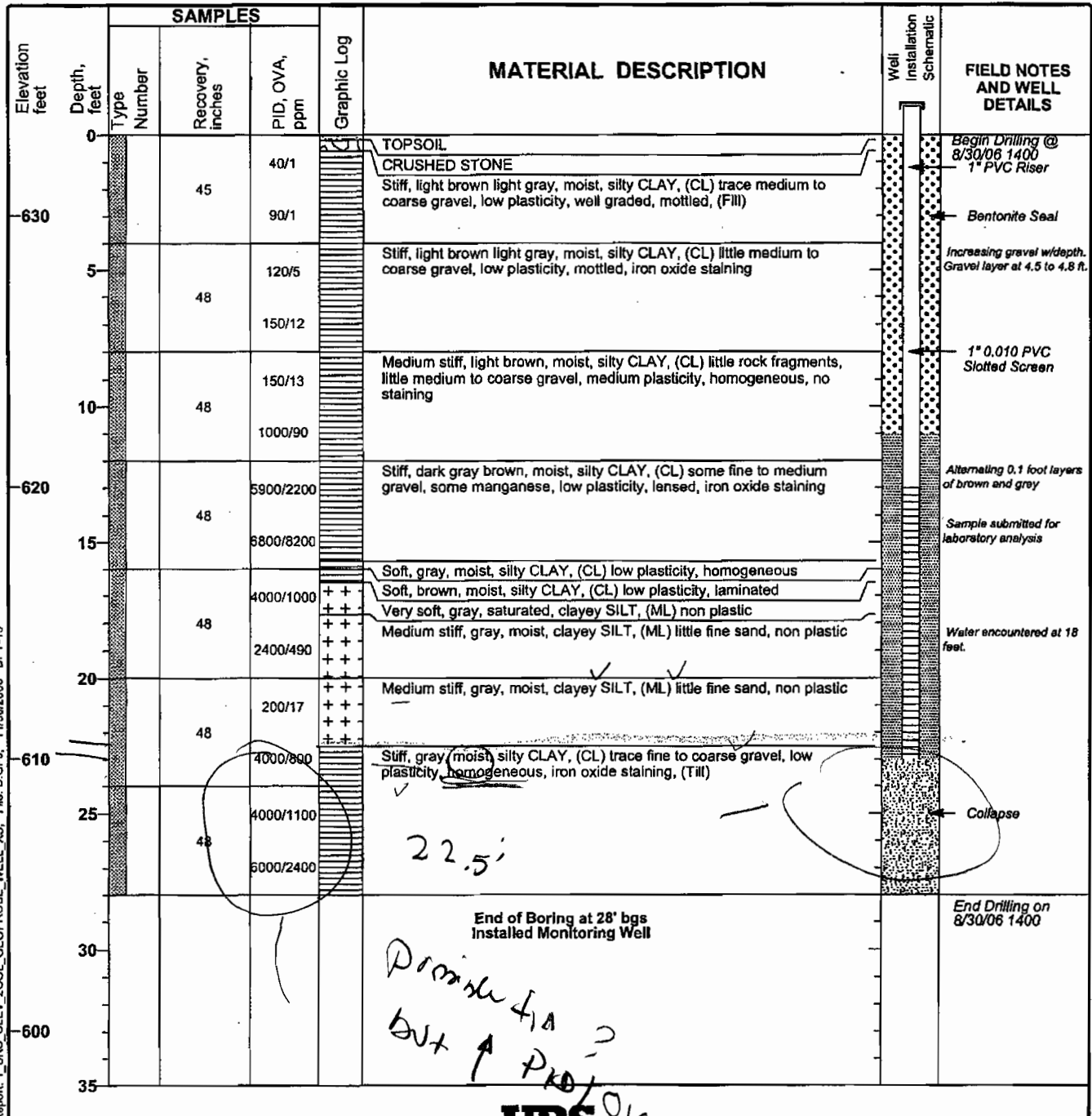
URS

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-19

Sheet 1 of 1

Date(s) Drilled	8/30/06 1400	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe geoprobe	Coordinates	817151.3448 2439045.171	Total Depth of Borehole	28.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	632.97'
Comments		Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	feet bgs on			Top of Casing Elevation	632.97



Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-20

Sheet 1 of 1

Date(s) Drilled	8/31/06 0855	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe	Coordinates	817209.1267 2439062.304	Total Depth of Borehole	28.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	632.72'
Location	Northwest corner of facility. Boring relocated to	Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	5.9 feet bgs on 9/18/2006			Top of Casing Elevation	632.72

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Well Installation Schematic	FIELD NOTES AND WELL DETAILS
		Type	Number	Recovery, inches	PID, OVA, ppm				
	0						TOPSOIL		Begin Drilling @ 8/31/06 0855 1" PVC Riser
				44	27/1		Medium stiff, brown gray, moist, silty CLAY, (CL) with rock fragments, with fine to coarse gravel, with fine to coarse sand, low plasticity, mottled, (Fill)		
630					37/1		Loose, dark gray dark brown, moist, clayey SAND, (SP) some fine to coarse gravel, fine to medium grained, (Fill)		Bentonite Seal
	5				39/12		Soft, brown, moist, CLAY, (CL) trace rock fragments, low plasticity		
			48		170/100		Soft, gray, moist, CLAY, (CL) trace silt, medium plasticity		
					4000/700		Soft, brown gray, moist, CLAY, (CL) trace silt, low plasticity, mottled		
	10		40		5300/900		Stiff, brown gray, moist, silty CLAY, (CL) trace rock fragments, low plasticity, chemical odor, no staining		NAPL seepage from pores in clay. Strong background TCE odor. Sample submitted for laboratory analysis
620					700/120		Soft, gray, moist, silty CLAY, (CL) trace rock fragments, low plasticity, chemical odor, no staining		Dräger tube screening of sample headspace for chloroform reads >10 ppm.
	15		44		110/85				1" 0.010 PVC Slotted Screen
					1900/320		Very soft, gray, wet, silty CLAY, (CL) with fine sand, medium plasticity, chemical odor, no staining		
			48		38/18		Soft, gray, wet, silty CLAY, (CL) with fine sand, low plasticity, chemical odor, no staining		
610	20		13		not screened				Dräger for chloroform in work area = 0 ppm
	25								Collapse No more rods available to continue advancement. Dräger tubes were used for chloroform and TCE screening at the borehole showed no detectable concentrations.
	30						End of Boring at 28' bgs Installed Monitoring Well		End Drilling on 8/31/06 0855
600							no fill		
	35								

Report: 1_URS_CLEV_2COL_GEOPROBE_WELL_XS; File: D.G.P.; 11/30/2006 DPT-20

URS

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-22

Sheet 1 of 1

Date(s) Drilled	9/11/06 0900	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe geoprobe	Coordinates	817072.6832 2439047.536	Total Depth of Borehole	20.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	633.68'
Comments		Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	feet bgs on			Top of Casing Elevation	633.68

		SAMPLES							
Elevation feet	Depth, feet	Type Number	Recovery, inches	PID, OVA, ppm	Graphic Log	MATERIAL DESCRIPTION	Well Installation Schematic	FIELD NOTES AND WELL DETAILS	
	0					TOPSOIL		Begin Drilling @ 9/11/06 0900	
			47	2/--		Stiff, light brown mottled gray, moist, silty CLAY, (CL) some roots, low plasticity		Bentonite Seal 1" PVC Riser	
-630				2/--					
	5		47	0/--		Stiff, brown, moist, CLAY, (CL) little gravel, low plasticity, laminated, iron oxide staining, Less gravel @ 8ft, Fe stained vertical fracture @11-12, c. Gravel @12.			
				3/--					
	10		41	2/--				1" 0.010 PVC Slotted Screen	
				1/--					
-620			45	0/--		Soft, gray, moist, silty CLAY, (CL) high plasticity, lensed, moist fine brwn sand upper ft. Saturated grey silt layers.		Water encountered at 14 feet Sampled with DUP0911A submitted.	
	15			0/--				Collapse	
			8	0/--					
	20					End of Boring at 20' bgs Installed Monitoring Well		End Drilling on 9/11/06 0900	
-610									
	25							Background=9.3 ppm PID /4.3 ppm FID.	
								FID failed during sample screening.	
	30								
-600									
	35								

Report: 1 URS_CLEV_2006_GEOPROBE_WELL_XS; File: D.GPJ; 11/30/2006 DPT-22

URS

Project: Detrex - Detrex

Project Location:

Project Number: 13811443

Log of Boring DPT-23

Sheet 1 of 1

Date(s) Drilled and Installed	9/11/06 1027	Geologist	J. Berk	Reviewer	D. Gray
Drilling Method	Geoprobe	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	18.00' bgs
Sampling Method	Macro-Core® sampler	Drill Bit Size/Type:	geoprobe	Approximate Surface Elevation	-634'
Drill Rig Type:	Geoprobe 5400 bobcat mounted	Groundwater Level(s)		Hammer Data	
Boring Location:	1100 State Rd				

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type Number	Recovery, inches	PID, OVA, ppm				
0				1/-			TOPSOIL	Begin drilling @ 9/11/06 1027
			46.0	8/-			Stiff, brown mottled gray, moist, silty CLAY, (CL) low plasticity, iron oxide staining, Medium gravel @ 4ft.	PID background=16, FID Failure until end of sample screening. ()
5			48.0	30/-			Dense, brown, saturated to moist, silty SAND, (SM) fine grained, Saturated layer @ 2.0-2.8ft.	
				350/-				
10			46.0	313/-			Very stiff, brown, moist, CLAY, (CL) some gravel, non plastic, laminated	Submitted to lab with DUP0911B ()
				660/-				
15			30.0	200/-			Very stiff, gray, moist, silty CLAY, (CL) low plasticity, Saturated silt seam @ 17ft.	Water encountered at 17 feet ()
			17.0	98/-				
20				0/-			End of Boring at 18' bgs	End drilling on 9/11/06 1050
25							possible Till?	
30							14.5'	
35							not far Picked - inconsistent w/ nearby borings	

Project: Detrex - Detrex
 Project Location: Along State Rd.
 Project Number: 13811443

Log of Boring DPT-24

Sheet 1 of 1

Date(s) Drilled and Installed	9/8/06 1400	Geologist	J. Berk	Reviewer	D. Gray
Drilling Method	Geoprobe	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	15.80' bgs
Sampling Method	Macro-Core® sampler	Drill Bit Size/Type:	geoprobe	Approximate Surface Elevation	631.91'
Drill Rig Type:	Geoprobe 5400 bobcat mounted	Groundwater Level(s)		Hammer Data	
Boring Location:	1100 State Rd				

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	PID, OVA, ppm			
	0						TOPSOIL	Begin drilling @ 9/8/06 1400
				48	10/2		Soft, dark brown, silty CLAY, (CL) some roots, medium plasticity	
630					15/2		Medium stiff, light brown mottled gray, moist, silty CLAY, (CL) some rock fragments, low plasticity	
	5			48	16/2		Very stiff, brown, moist, CLAY, (CL) some fine to coarse gravel, low plasticity, laminated, iron oxide staining	Sample submitted for laboratory analysis ()
					1/3			
	10			45	2/2			
					2/3		Medium stiff, gray, moist, silty CLAY, (CL) some rock fragments, low plasticity, (Till)	
620				30	3/2			
	15				2/2		Very stiff, gray, moist, SILT, (ML) non plastic	
							End of Boring at 15.8' bgs	End drilling on 9/8/06 1413
	20							
610								
	25							
	30							
600								
	35							

Report: I_URS_CLEV_3COL_S.XS; File: D.GPJ; 11/30/2006 DPT-24

URS

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-25

Sheet 1 of 1

Date(s) Drilled	9/11/06 1215	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe geoprobe	Coordinates	817133.9061 2438784.584	Total Depth of Borehole	16.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	634.49'
Location	West side of State Rd.	Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	feet bgs on			Top of Casing Elevation	634.49

Elevation feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	Well Installation Schematic	FIELD NOTES AND WELL DETAILS
	Type	Number	Recovery, inches	PID, OVA, ppm				
0						TOPSOIL		Begin Drilling @ 9/11/06 1215
			48.0	0/10	++	Soft, brown mottled gray, moist, clayey SILT, (ML) non plastic		1" PVC Riser
				5/2	++			Bentonite Seal
					++	Stiff, brown mottled gray, moist, silty CLAY, (CL) low plasticity, w/Fe staining @ 4ft.		Sample submitted for laboratory analysis
-630			48.0	1/5		Stiff, brown, moist, CLAY, (CL) with rock fragments, low plasticity, iron oxide staining, Dry silt seam @ 8.2-8.4ft		Vertically Fe stained fracture.
				2/0				1" 0.010 PVC Slotted Screen
			41.0	1/1				Vertical Fe stained fracture.
				0/0				
				1/1		Soft, gray, moist, silty CLAY, (CL) medium plasticity, Saturated fine brown sand @ 14-14.3 ft.		
-620			27.0	1/1				Collapse
						End of Boring at 16' bgs Installed Monitoring Well		End Drilling on 9/11/06 1215
20								
-610								
25								
30								
-600								
35								

no fill

Report: 1_URS_CLEV_2COL_GEOPROBE_WELL_XS; File: D.GPJ; 11/30/2006 DPT-25

URS

Project: Detrex - Detrex
 Project Location:
 Project Number: 13811443

Log of Boring DPT-26

Sheet 1 of 1

Date(s) Drilled and Installed	9/11/06 1255	Geologist	J. Berk	Reviewer	D. Gray
Drilling Method	Geoprobe	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	16.00' bgs
Sampling Method	Macro-Core® sampler	Drill Bit Size/Type	geoprobe	Approximate Surface Elevation	633.78'
Drill Rig Type	Geoprobe 5400 bobcat mounted	Groundwater Level(s)		Hammer Data	
Boring Location	1100 State Rd				

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	PID, OVA, ppm			
0	0				8/0		TOPSOIL	Begin drilling @ 9/11/06 1255
				40	10/0		Stiff, brown mottled gray, moist, silty CLAY, trace roots	
630	5			48	8/0			Sample submitted for laboratory analysis ()
					5/0			
	10			48	6/0		Stiff, brown, moist, silty CLAY, little rock fragments, iron oxide staining	
					7/0			
620	15			40	6/0		Soft, gray, moist, silty CLAY, some fine to medium gravel, low plasticity, Silt seam @ 14-14.3ft, moist	
	20						End of Boring at 16' bgs	End drilling on 9/11/06 1322
							No till	
610	25							
	30							
600	35							

Report: 1_URS_CLEV_3COL_S_XS; File: D.GPJ; 11/30/2008 DPT-26

URS

Project: Detrex - Detrex
 Project Location: 59-ft W of DPT-19, 83 ft NE of DPT-18
 Project Number: 13811443

Log of Boring DPT-28

Sheet 1 of 1

Date(s) Drilled and Installed	9/11/06 1403	Geologist	J. Berk	Reviewer	D. Gray
Drilling Method	Geoprobe	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	20.00' bgs
Sampling Method	Macro-Core® sampler	Drill Bit Size/Type	geoprobe	Approximate Surface Elevation	632.72'
Drill Rig Type	Geoprobe 5400 bobcat mounted	Groundwater Level(s)		Hammer Data	
Boring Location	1100 State Rd				

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type Number	Recovery, inches	PID, OVA, ppm				
	0						TOPSOIL	Begin drilling @ 9/11/06 1403
			48	2/1			Very stiff, dark brown, moist, silty CLAY, (CL) some shale fragments, non plastic	
630				1/3			Stiff, light brown mottled gray, moist, silty CLAY, (CL) little fine to medium gravel, trace cobbles, low plasticity, Iron oxide staining	
	5			1/2				
			48	1/3				
				1/4				
	10		48	2/4				
620			28	2/1			Soft, brown and gray, very moist, clayey SILT, (ML) non plastic	
	15							
							Soft, gray, wet, clayey SILT, (ML) non plastic	
	20						End of Boring at 20' bgs	
610								End drilling on 9/11/06 1428
	25							
	30							
600								
	35							

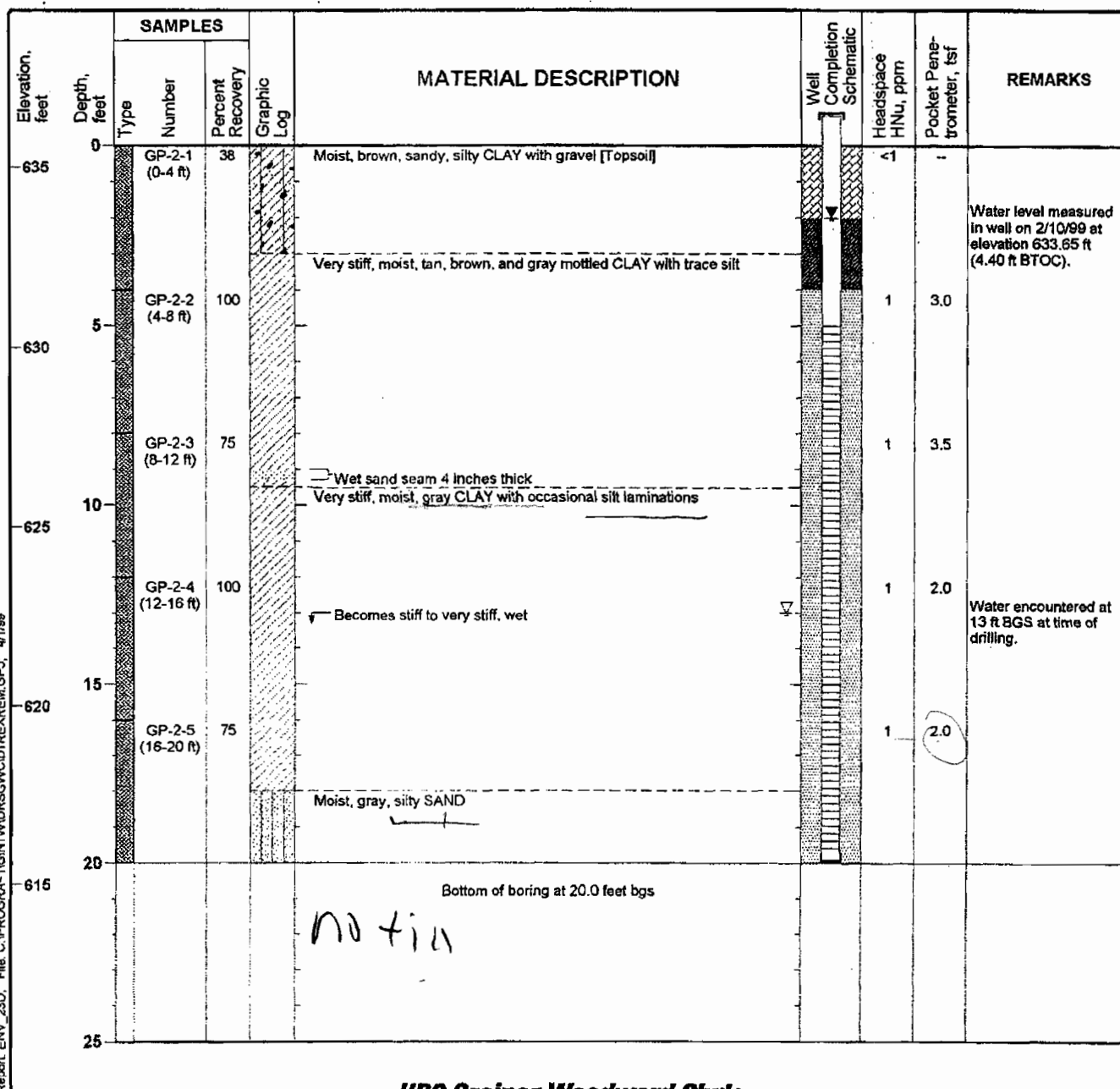
Report: 1_URS_CLEV_3COL_S_XS; File: D.GPJ; 11/30/2006 DPT-28

URS

Project Number: 38-08E06011.00

Sheet 1 of 1

Date(s) Drilled	2/8/99	Logged By	S. Davis	Checked By	S. Davis
Drilling Method	Geoprobe / Direct Push	Drilling Contractor	Summit Drilling Co.	Total Depth of Borehole	20.0 feet
Drill Rig Type	Geoprobe 6600	Drill Bit Size/Type	2-1/8-Inch geoprobe drive point	Surface Elevation	635 feet MSL (approx.)
Groundwater Level and Date	Elevation 633.65 feet on 2/10/99	Sampler Type	Geoprobe dual-tube sampler	Top of PVC Elevation	638.05 feet MSL
Diameter of Hole (inches)	2-1/8	Diameter of Well (inches)	2	Type of Well Casing	2-Inch-dia. Schedule 40 PVC
Type of Sand Pack	Filter sand	Screen Perforation	0.010-inch slot	Type and Depth of Seal(s)	Bentonite 4.0 - 2.0 ft, cement grout 2.0 ft to surface
Comments	Refer to site plan for boring/well location.				

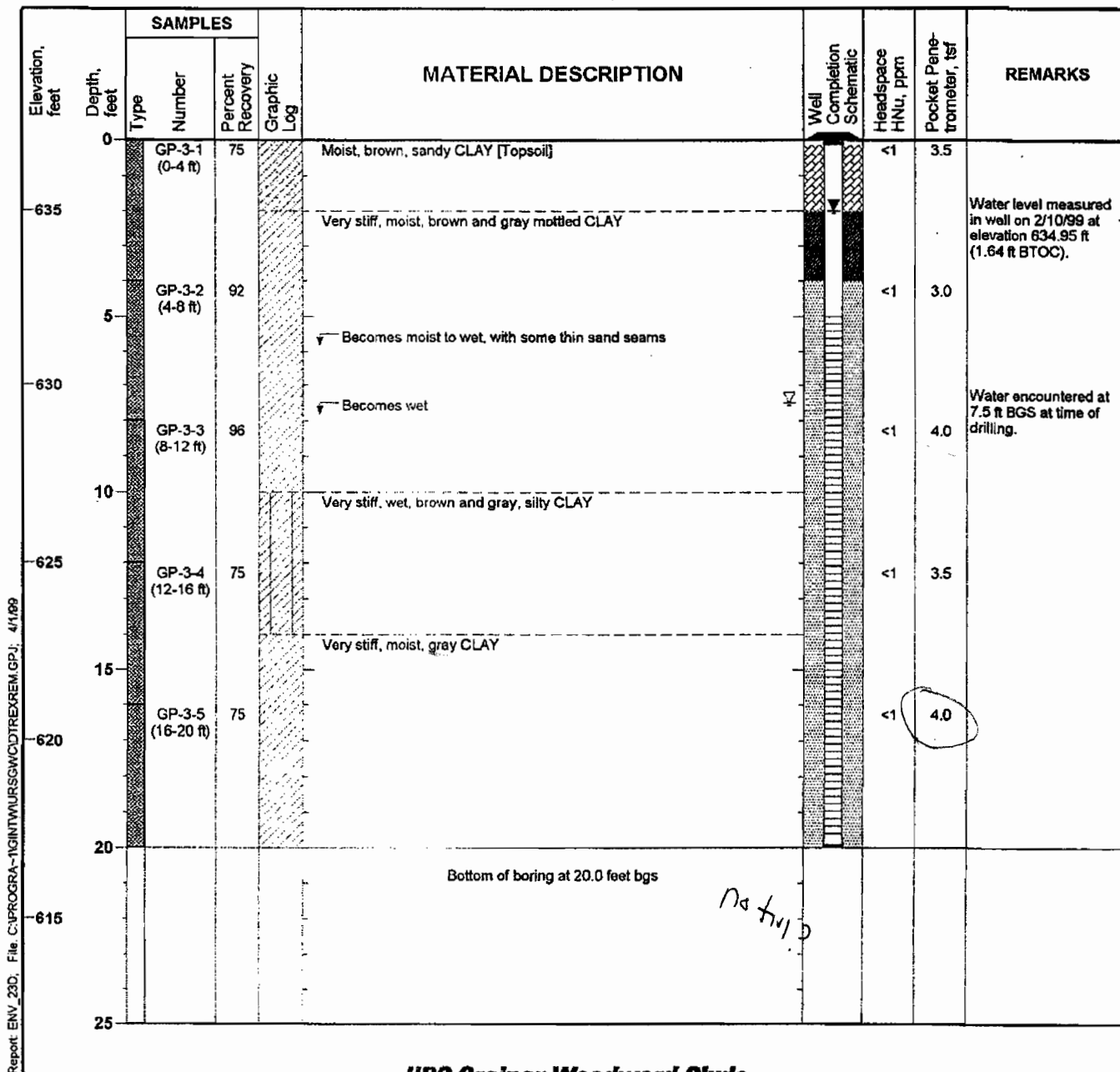


Project: Detrex Corporation Remedial Design
 Project Location: Ashtabula, Ohio
 Project Number: 38-08E06011.00

Log of Boring GP-3

Sheet 1 of 1

Date(s) Drilled	2/8/99		Logged By	S. Davis	Checked By	S. Davis	
Drilling Method	Geoprobe / Direct Push		Drilling Contractor	Summit Drilling Co.	Total Depth of Borehole	20.0 feet	
Drill Rig Type	Geoprobe 6600		Drill Bit Size/Type	2-1/8-inch geoprobe drive point	Surface Elevation	637 feet MSL (approx.)	
Groundwater Level and Date	Elevation 634.95 feet on 2/10/99		Sampler Type	Geoprobe dual-tube sampler	Top of PVC Elevation	636.59 feet MSL	
Diameter of Hole (inches)	2-1/8	Diameter of Well (inches)	2	Type of Well Casing	2-inch-dia. Schedule 40 PVC	Screen Perforation	0.010-inch slot
Type of Sand Pack	Filter sand		Type and Depth of Seal(s)	Bentonite 4.0 - 2.0 ft, cement grout 2.0 ft to surface			
Comments	Refer to site plan for boring/well location.						



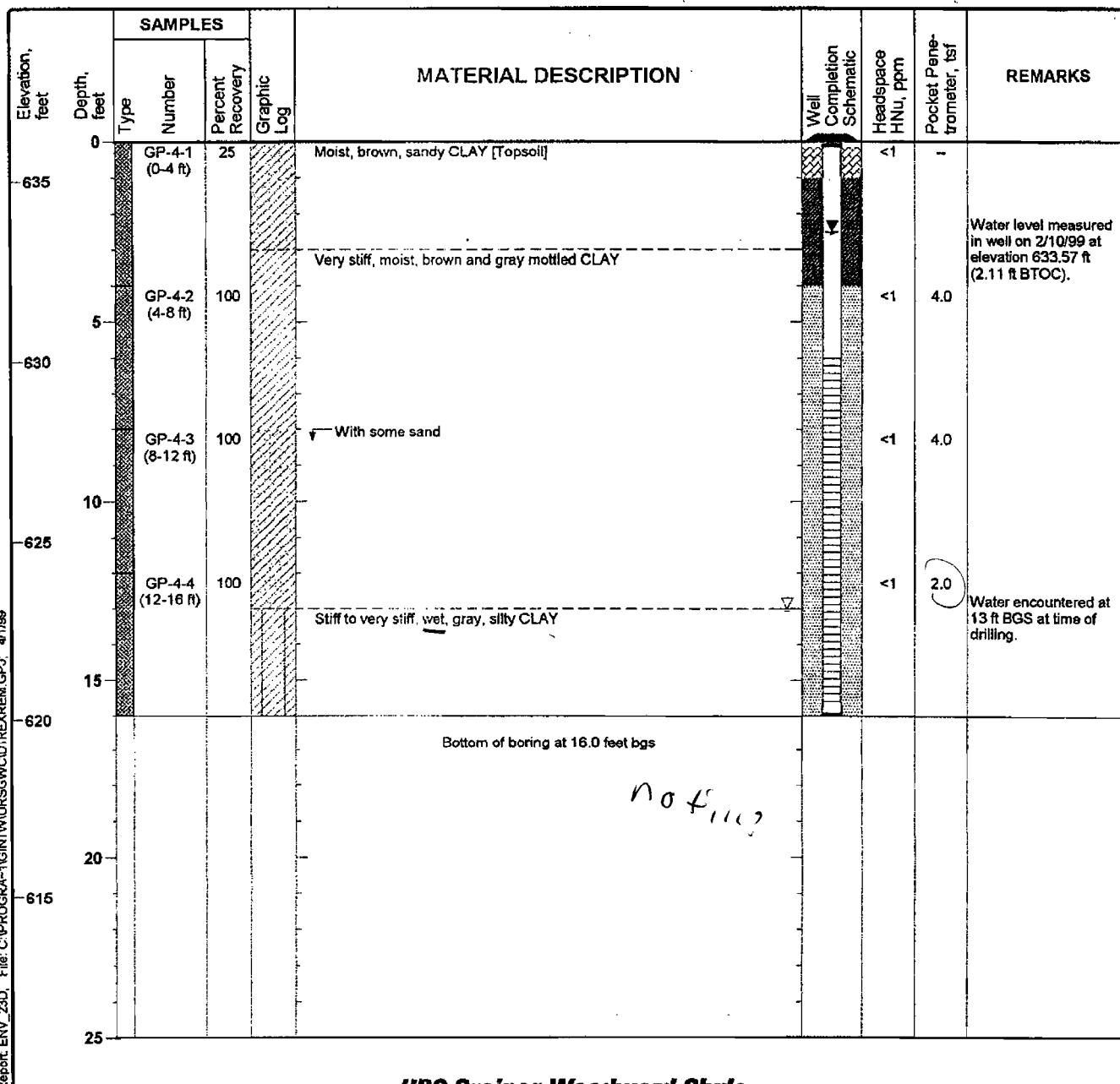
URS Greiner Woodward Clyde

Project: Detrex Corporation Remedial Design
 Project Location: Ashtabula, Ohio
 Project Number: 38-08E06011.00

Log of Boring GP-4

Sheet 1 of 1

Date(s) Drilled	2/8/99		Logged By	S. Davis	Checked By	S. Davis	
Drilling Method	Geoprobe / Direct Push		Drilling Contractor	Summit Drilling Co.	Total Depth of Borehole	16.0 feet	
Drill Rig Type	Geoprobe 6600		Drill Bit Size/Type	2-1/8-inch geoprobe drive point	Surface Elevation	636 feet MSL (approx.)	
Groundwater Level and Date	Elevation 633.57 feet on 2/10/99		Sampler Type	Geoprobe dual-tube sampler	Top of PVC Elevation	635.68 feet MSL	
Diameter of Hole (inches)	2-1/8	Diameter of Well (inches)	2	Type of Well Casing	2-Inch-dia. Schedule 40 PVC	Screen Perforation	0.010-inch slot
Type of Sand Pack	Filter sand		Type and Depth of Seal(s)	Bentonite 4.0 - 1.0 ft, cement grout 1.0 ft to surface			
Comments	Refer to site plan for boring/well location.						



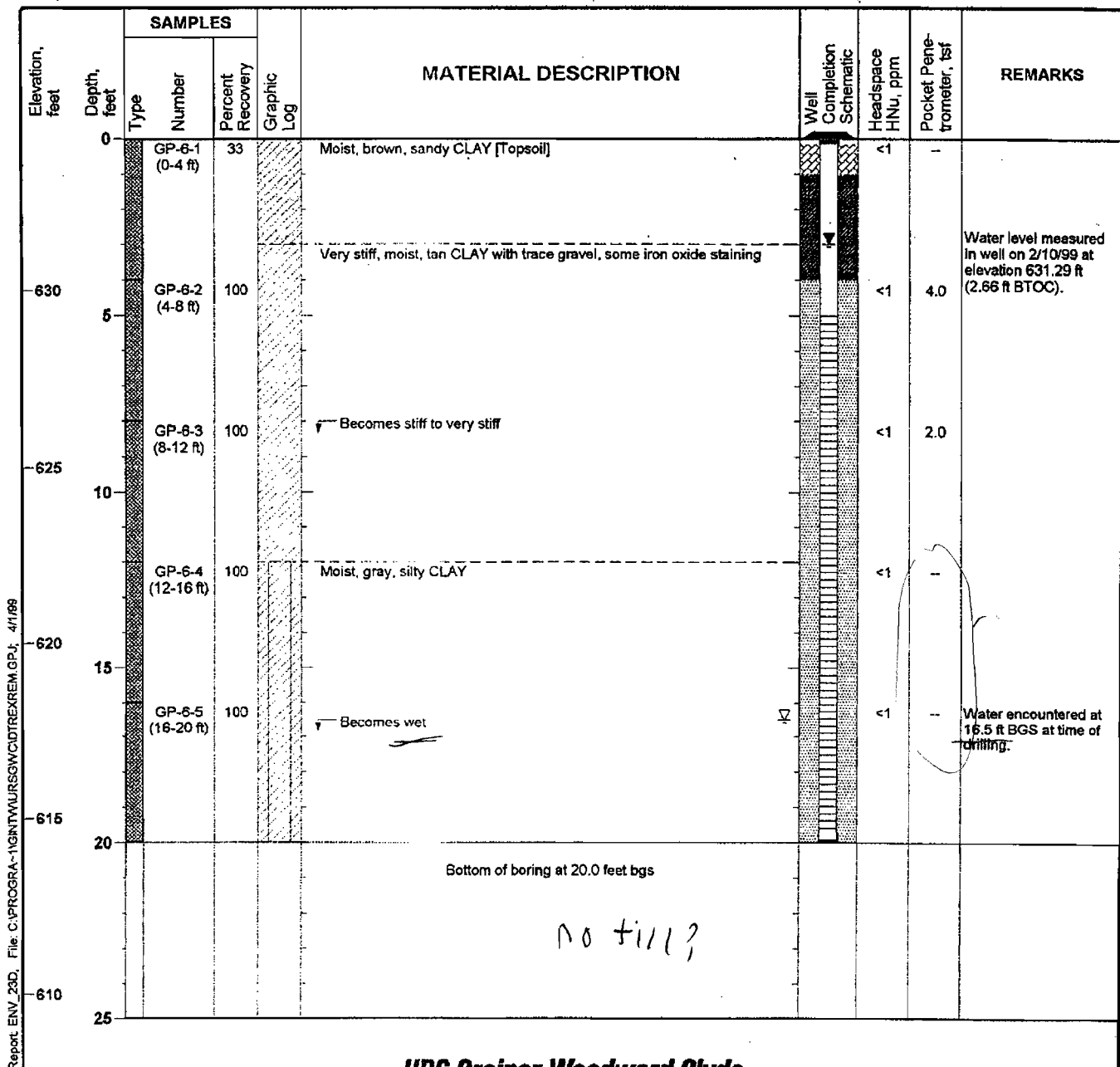
URS Greiner Woodward Clyde

Project: Detrex Corporation Remedial Design
 Project Location: Ashtabula, Ohio
 Project Number: 38-08E06011.00

Log of Boring GP-6

Sheet 1 of 1

Date(s) Drilled	2/8/99		Logged By	S. Davis	Checked By	S. Davis	
Drilling Method	Geoprobe / Direct Push		Drilling Contractor	Summit Drilling Co.	Total Depth of Borehole	20.0 feet	
Drill Rig Type	Geoprobe 6600		Drill Bit Size/Type	2-1/8-inch geoprobe drive point	Surface Elevation	634 feet MSL (approx.)	
Groundwater Level and Date	Elevation 631.29 feet on 2/10/99		Sampler Type	Geoprobe dual-tube sampler	Top of PVC Elevation	633.95 feet MSL	
Diameter of Hole (inches)	2-1/8	Diameter of Well (inches)	2	Type of Well Casing	2-inch-dia. Schedule 40 PVC	Screen Perforation	0.010-inch slot
Type of Sand Pack	Filter sand		Type and Depth of Seal(s)	Bentonite 4.0 - 1.0 ft, cement grout 1.0 ft to surface			
Comments	Refer to site plan for boring/well location.						



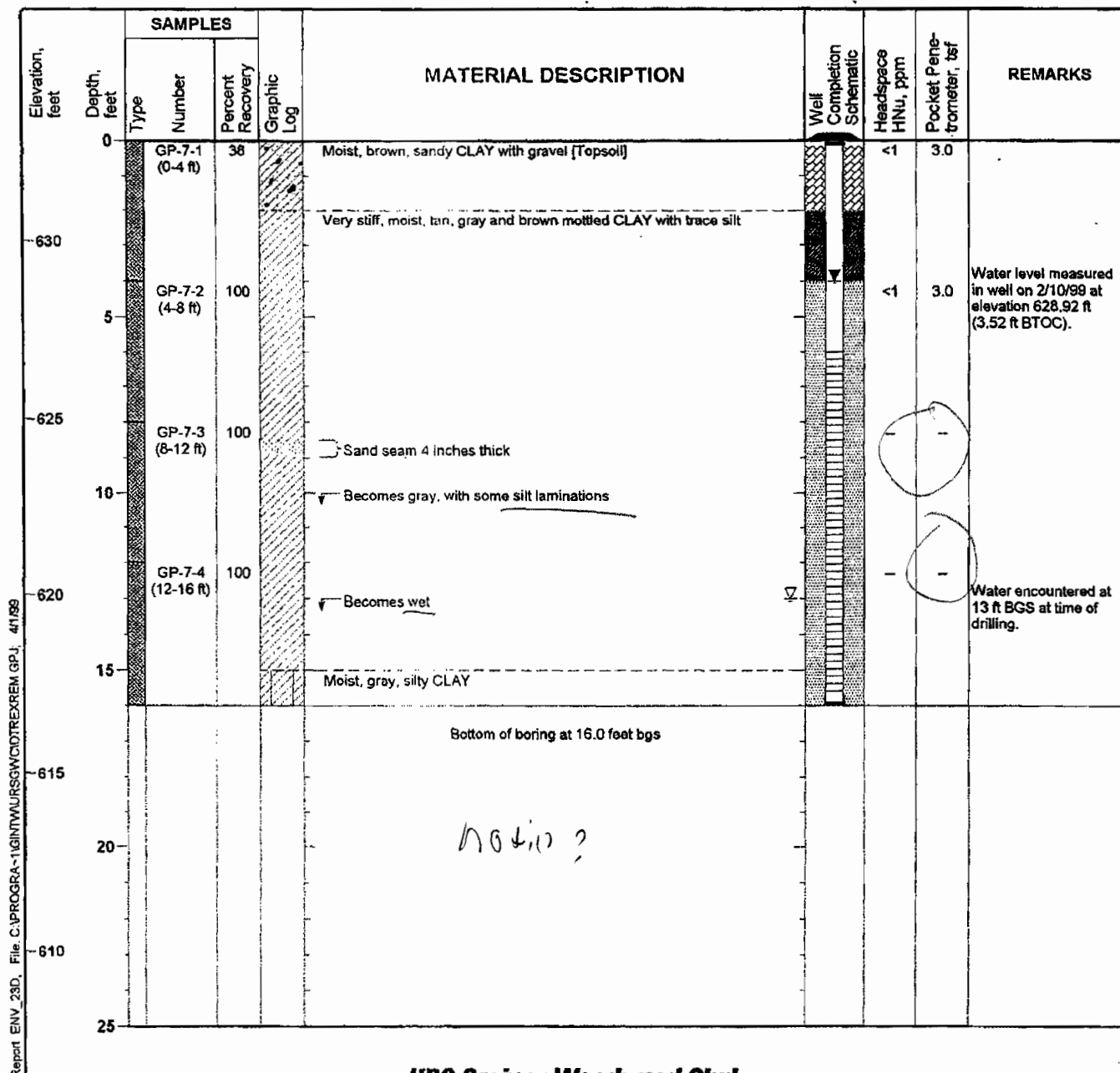
URS Greiner Woodward Clyde

Project: Detrex Corporation Remedial Design
 Project Location: Ashtabula, Ohio
 Project Number: 38-08E06011.00

Log of Boring GP-7

Sheet 1 of 1

Date(s) Drilled	2/8/99		Logged By	S. Davis	Checked By	S. Davis	
Drilling Method	Geoprobe / Direct Push		Drilling Contractor	Summit Drilling Co.	Total Depth of Borehole	16.0 feet	
Drill Rig Type	Geoprobe 6600		Drill Bit Size/Type	2-1/8-inch geoprobe drive point	Surface Elevation	633 feet MSL (approx.)	
Groundwater Level and Date	Elevation 628.92 feet on 2/10/99		Sampler Type	Geoprobe dual-tube sampler	Top of PVC Elevation	632.44 feet MSL	
Diameter of Hole (inches)	2-1/8	Diameter of Well (inches)	2	Type of Well Casing	2-inch-dia. Schedule 40 PVC	Screen Perforation	0.010-inch slot
Type of Sand Pack	Filter sand		Type and Depth of Seal(s)	Bentonite 4.0 - 2.0 ft, cement grout 2.0 ft to surface			
Comments	Refer to site plan for boring/well location.						



URS Greiner Woodward Clyde

Project: Detrex Corporation Remedial Design
 Project Location: Ashtabula, Ohio
 Project Number: 38-08E06011.00

Log of Boring GP-8

Sheet 1 of 1

Date(s) Drilled	2/9/99		Logged By	S. Davis	Checked By	S. Davis	
Drilling Method	Geoprobe / Direct Push		Drilling Contractor	Summit Drilling Co.	Total Depth of Borehole	24.0 feet	
Drill Rig Type	Geoprobe 6600		Drill Bit Size/Type	2-1/8-inch geoprobe drive point	Surface Elevation	637 feet MSL (approx.)	
Groundwater Level and Date	Elevation 631.35 feet on 2/10/99		Sampler Type	Geoprobe dual-tube sampler	Top of PVC Elevation	639.17 feet MSL	
Diameter of Hole (Inches)	2-1/8	Diameter of Well (Inches)	2	Type of Well Casing	2-inch-dia. Schedule 40 PVC	Screen Perforation	0.010-Inch slot
Type of Sand Pack	Filter sand		Type and Depth of Seal(s)	Bentonite 11.0 - 2.0 ft, cement grout 2.0 ft to surface			
Comments	Refer to site plan for boring/well location.						

Elevation, feet	SAMPLES			MATERIAL DESCRIPTION	Well Completion Schematic	Headspace H ₂ O, ppm	Pocket Penetrometer, tsf	REMARKS
	Type	Number	Percent Recovery					
0								
		GP-8-1 (0-4 ft)	75	Moist, brown, sandy CLAY [Topsoil]		1	1.5	
635								
				Stiff to very stiff, moist, gray CLAY with debris [Fill]				
5		GP-8-2 (4-8 ft)	63			2	3.0	
630								Water level measured in well on 2/10/99 at elevation 631.35 ft (7.82 ft BTOC).
10		GP-8-3 (8-12 ft)	0			-	-	
625								
15		GP-8-4 (12-16 ft)	100	Very stiff, moist, tan and gray mottled CLAY		<1	3.5	
620								
20		GP-8-5 (16-20 ft)	88	Medium stiff to stiff, moist, gray, silty CLAY, laminated ← Sand seam 2 inches thick ← Sand seam 2 inches thick		<1	2.0	
615								
25		GP-8-6 (20-24 ft)	100	← Becomes wet, with no laminations <i>no till?</i>		<1	2.0	Water encountered at 22 ft BGS at time of drilling.
				Bottom of boring at 24.0 feet bgs				

Report ENV_23D, File: C:\PROGRAM-1\GINTW\URS\WOODWARD\DETREX\GP-8, 4/1/99

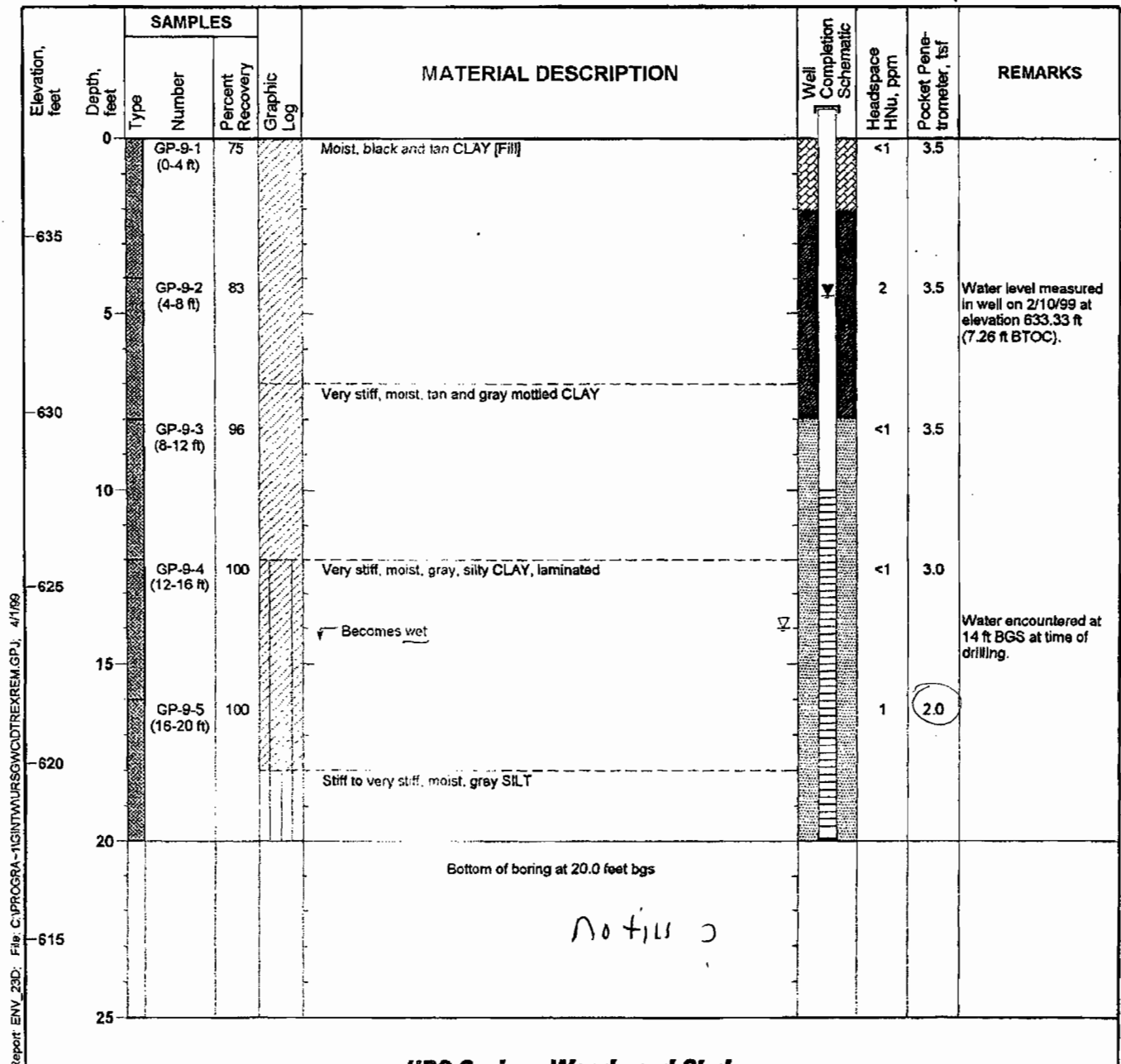
URS Greiner Woodward Clyde

Project: Detrex Corporation Remedial Design
 Project Location: Ashtabula, Ohio
 Project Number: 38-08E06011.00

Log of Boring GP-9

Sheet 1 of 1

Date(s) Drilled	2/9/99		Logged By	S. Davis	Checked By	S. Davis	
Drilling Method	Geoprobe / Direct Push		Drilling Contractor	Summit Drilling Co.	Total Depth of Borehole	20.0 feet	
Drill Rig Type	Geoprobe 6600		Drill Bit Size/Type	2-1/8-inch geoprobe drive point	Surface Elevation	638 feet MSL (approx.)	
Groundwater Level and Date	Elevation 633.33 feet on 2/10/99		Sampler Type	Geoprobe dual-tube sampler	Top of PVC Elevation	640.59 feet MSL	
Diameter of Hole (inches)	2-1/8	Diameter of Well (inches)	2	Type of Well Casing	2-inch-dia. Schedule 40 PVC	Screen Perforation	0.010-inch slot
Type of Sand Pack	Filter sand		Type and Depth of Seal(s)	Bentonite 8.0 - 2.0 ft, cement grout 2.0 ft to surface			
Comments	Refer to site plan for boring/well location.						



URS Greiner Woodward Clyde

Project: Detrex Corporation Remedial Design
 Project Location: Ashtabula, Ohio
 Project Number: 38-08E06011.00

Log of Boring GP-10

Sheet 1 of 1

Date(s) Drilled	2/9/99		Logged By	S. Davis	Checked By	S. Davis	
Drilling Method	Geoprobe / Direct Push		Drilling Contractor	Summit Drilling Co.	Total Depth of Borehole	20.0 feet	
Drill Rig Type	Geoprobe 6600		Drill Bit Size/Type	2-1/8-inch geoprobe drive point	Surface Elevation	636 feet MSL (approx.)	
Groundwater Level and Date	Elevation 629.20 feet on 2/10/99		Sampler Type	Geoprobe dual-tube sampler	Top of PVC Elevation	638.53 feet MSL	
Diameter of Hole (inches)	2-1/8	Diameter of Well (inches)	2	Type of Well Casing	2-inch-dia. Schedule 40 PVC	Screen Perforation	0.010-inch slot
Type of Sand Pack	Filter sand		Type and Depth of Seal(s)	Bentonite 8.0 - 2.0 ft, cement grout 2.0 ft to surface			
Comments	Refer to site plan for boring/well location.						

Elevation, feet	Depth, feet	SAMPLES			MATERIAL DESCRIPTION	Well Completion Schematic	Headspace HNU, ppm	Pocket Penetrometer, tsf	REMARKS
		Type	Number	Percent Recovery	Graphic Log				
635	0	GP-10-1	(0-4 ft)	63			<1	3.0	
					Moist, brown, sandy, silty CLAY [Topsoil]				
					Very stiff, moist, tan and brown CLAY				
630	5	GP-10-2	(4-8 ft)	50			<1	4.5	
					↓ Becomes hard				
					↓ Becomes very stiff				
625	10	GP-10-3	(8-12 ft)	63			2	4.0	
					↓ Becomes gray				
620	15	GP-10-4	(12-16 ft)	100			<1	3.5	
					↓ Becomes stiff to very stiff, wet				
					Stiff to very stiff, moist, gray SILT				
615	20	GP-10-5	(16-20 ft)	100			2	2.0	Water encountered at 16 ft BGS at time of drilling.
					Bottom of boring at 20.0 feet bgs				
					no fill ?				
	25								

Report: ENV_23D, File: C:\PROGRA-1\GINTWURSGWCDTREM\GP-10\4/1/99

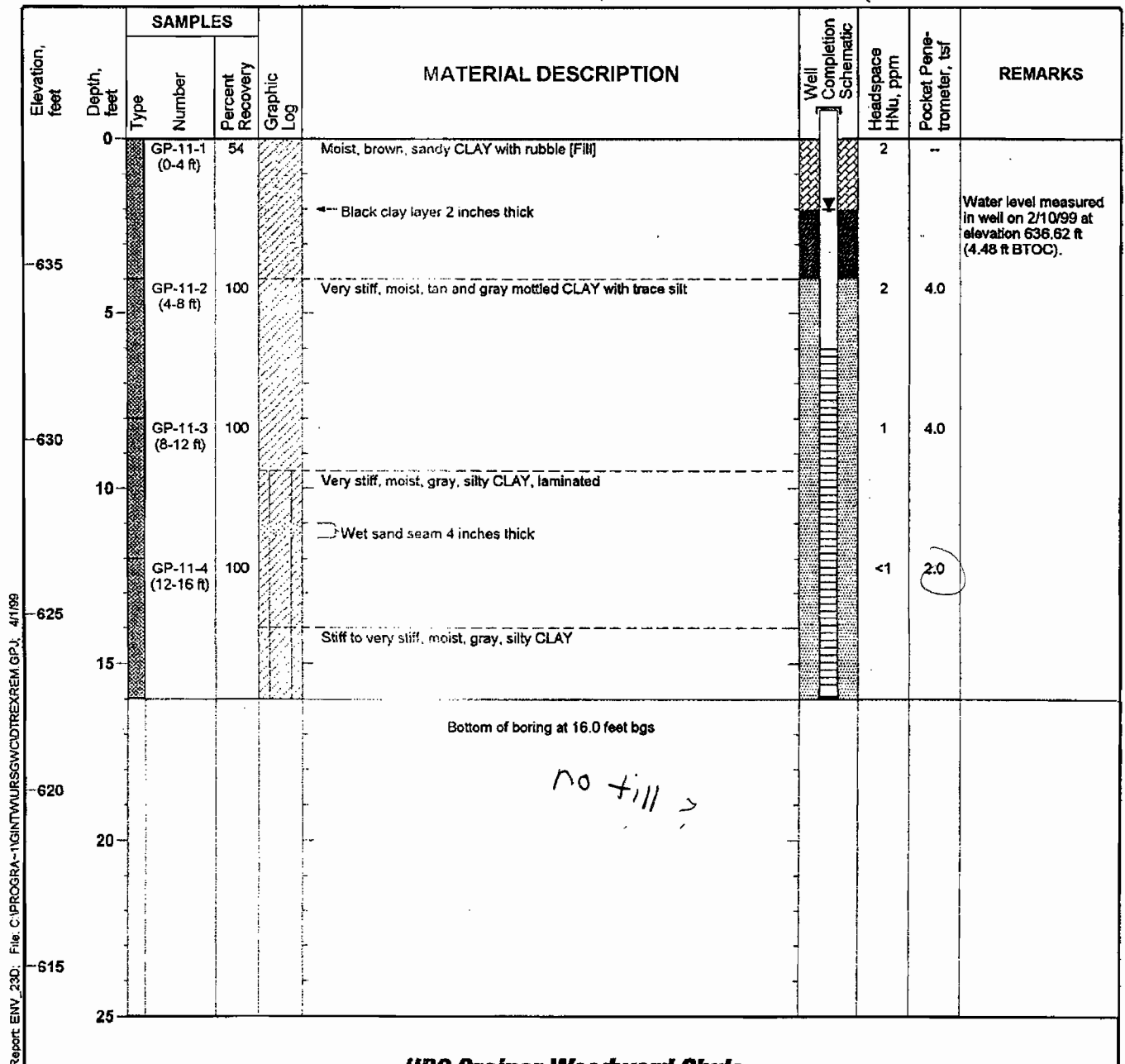
URS Greiner Woodward Clyde

Project: Detrex Corporation Remedial Design
 Project Location: Ashtabula, Ohio
 Project Number: 38-08E06011.00

Log of Boring GP-11

Sheet 1 of 1

Date(s) Drilled	2/9/99		Logged By	S. Davis	Checked By	S. Davis	
Drilling Method	Geoprobe / Direct Push		Drilling Contractor	Summit Drilling Co.	Total Depth of Borehole	16.0 feet	
Drill Rig Type	Geoprobe 6600		Drill Bit Size/Type	2-1/8-inch geoprobe drive point	Surface Elevation	638 feet MSL (approx.)	
Groundwater Level and Date	Elevation 636.62 feet on 2/10/99		Sampler Type	Geoprobe dual-tube sampler	Top of PVC Elevation	641.10 feet MSL	
Diameter of Hole (inches)	2-1/8	Diameter of Well (inches)	2	Type of Well Casing	2-inch-dia. Schedule 40 PVC	Screen Perforation	0.010-inch slot
Type of Sand Pack	Filter sand		Type and Depth of Seal(s)	Bentonite 4.0 - 2.0 ft, cement grout 2.0 ft to surface			
Comments	Refer to site plan for boring/well location.						



URS Greiner Woodward Clyde

Project: Detrex Project Location: 1100 State Road, Ashtabula, Ohio Project Number: 13810732	Log of Boring GP-500 Sheet 1 of 1
------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------

Date(s) Drilled: 9/7/05	Logged By: J. Berk	Checked By: K. Mast
Drilling Method: Direct Push	Drill Bit Size/Type: 4-foot long geoprobe sampler	Total Depth of Borehole: 12.0 feet
Drill Rig Type: Geoprobe 6600	Drilling Contractor: Summit Drilling, Inc.	Surface Elevation: 634.45 above MSL
Groundwater Level and Date Measured:	Sampler Types: Acetate Liner	Boring Completion: Bentonite Chips
Coordinate Location: N 816410.9 E 2471835.8	Boring Location: Refer to Site Plan	

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm.			
0							Hard, dry, orange, brown and gray mottled, silty CLAY	
				48	0.0			
					0.0			
							becomes moist	
630	5			48	0.0		Firm, moist, brown, silty CLAY	
					0.0		increasing clay content	
							Soft, wet, brown, silty SAND	
625	10			38	0.2		Hard, moist, gray, silty SAND	
							Hard, moist, gray, silty CLAY, trace gravel [TILL]	
							End of boring at 12 feet bgs	
							possible fin @ 11.5'	
620	15							
615	20							

Report: ENV_3CS_3COL: File: DETREX9-7-05.GPJ; 2/1/2006 GP-500

URS

Project: Detrex**Project Location: 1100 State Road, Ashtabula, Ohio****Project Number: 13810732****Log of Boring GP-501**

Sheet 1 of 1

Date(s) Drilled	9/7/05	Logged By	J. Berk	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	16.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	634.00 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Boring Completion	Bentonite Chips
Coordinate Location	N 816377.4 E 2471793.7		Boring Location	Refer to Site Plan	

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm.			
0					0.0		Hard, dry, dark brown, clayey SILT	
				48	0.0		Hard, dry, brown, SILT, trace clay	
					0.0			
630					0.0		Hard, moist, brown, silty CLAY, laminated	
5				48	0.0			
					0.0		Firm, wet, brown, silty SAND	
							↙ becomes hard, moist, increasing clay content	
625							Soft, wet, brown, silty SAND, with clay	
							↙ becomes loose, dry	
10				12	0.0			
					0.0		Soft, wet, gray, sandy SILT	
620				24	0.0		Hard, dry, gray, CLAY, and silt layers	
15					0.0			
							End of boring at 15 feet bgs	
							pink fill	
615								
20								

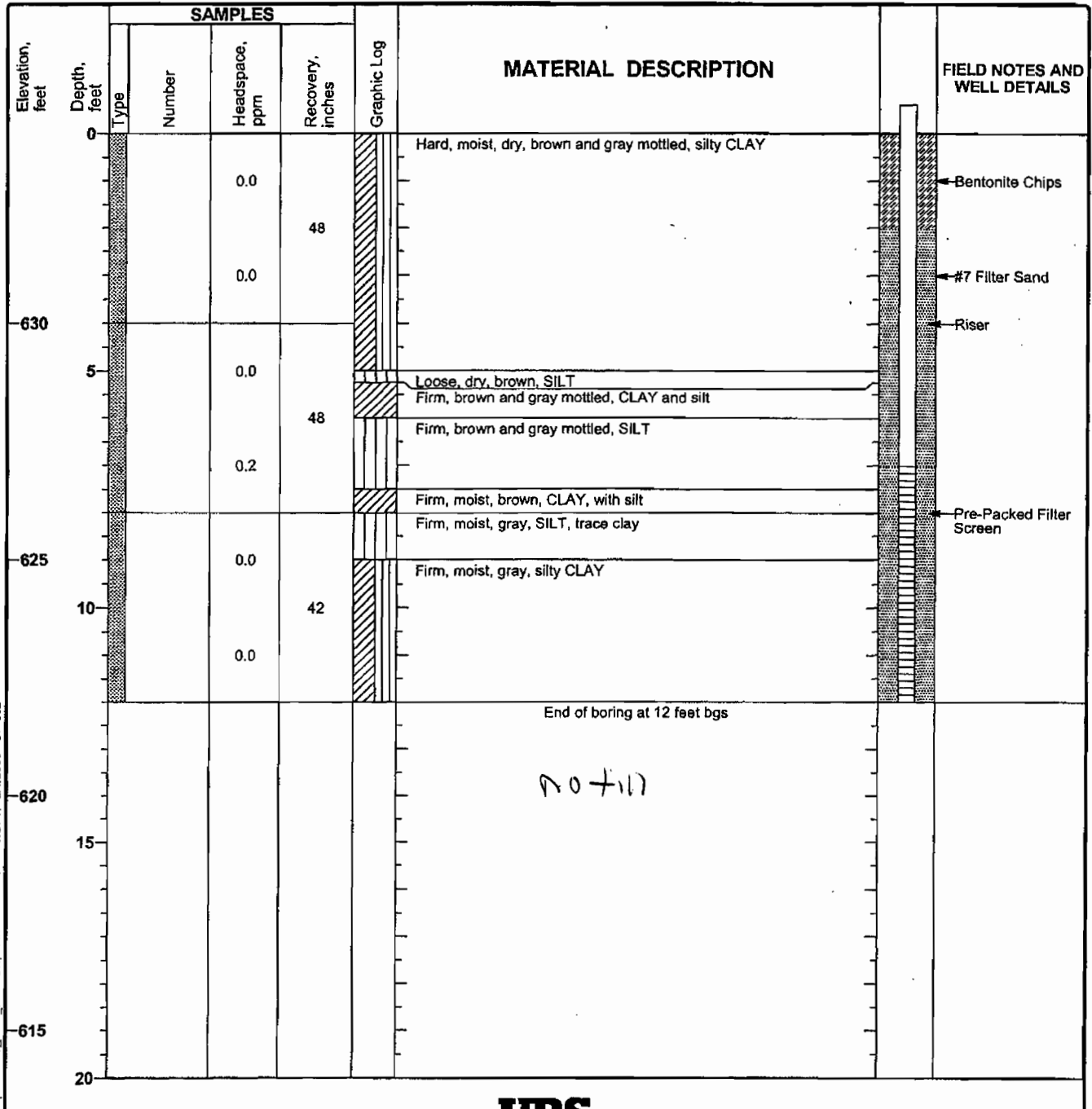
Report: ENV_3CS_3COL; File: DETREX9-7-05.GPJ; 2/1/2008 GP-501

URS

Project: Detrex**Project Location: 1100 State Road, Ashtabula, Ohio****Project Number: 13810732****Log of Boring GP-502**

Sheet 1 of 1

Date(s) Drilled	9/7/05	Logged By	J. Berk	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	12.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	634.00 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Top of Casing Elevation	
Coordinate Location	N 816383.2 E 2471751.0	Boring Location	Refer to Site Plan		



Report: ENV_38W_MARION; File: DETREX9-7-05.GPJ; 2/1/2006 GP-502

URS

Project: Detrex

Project Location: 1100 State Road, Ashtabula, Ohio

Project Number: 13810732

Log of Boring GP-503

Sheet 1 of 1

Date(s) Drilled	9/7/05	Logged By	J. Berk	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	12.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	634.00 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Boring Completion	Bentonite Chips
Coordinate Location	N 816349.9 E 2471722.0		Boring Location	Refer to Site Plan	

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm.			
0							Hard, moist, brown and gray mottled, silty CLAY	
				36	0.0			
					0.0			
630								
	5			48	0.0		Hard, moist, brown and gray mottled, clayey SILT	
							Hard, moist, brown and gray mottled, silty CLAY	
					0.0		Firm, moist, brown, clayey SILT	
							Dense, dry, silty SAND, trace clay	
625								
	10			26	0.0		Firm, dry, brown, SILT	
							Firm, dry, gray, silty CLAY	
							End of boring at 12 feet bgs	
620								
	15							
615								
20								

Report: ENV_3CS_3COL; File: DETREX9-7-05.GPJ; 2/1/2006 GP-503

URS

Project: Detrex	Log of Boring GP-504
Project Location: 1100 State Road, Ashtabula, Ohio	Sheet 1 of 1
Project Number: 13810732	

Date(s) Drilled	9/7/05	Logged By	J. Kaminski	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	12.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	634.54 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Boring Completion	Bentonite Chips
Coordinate Location	N 816543.2 E 2471508.6	Boring Location	Refer to Site Plan		

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm.			
0							Firm, dry, brown, silty CLAY, with organic material [TOPSOIL]	
				36	0.2		Hard, dry, light brown and gray mottled, silty CLAY, brittle	
					0.0			
							becomes brown	
630	5			48	0.4			
					0.4			
							Loose, dry, light brown, silty SAND	
					0.4			
625	10			26				
							Soft, moist, gray, silty CLAY	
							Hard, moist, gray, silty CLAY, with fine sand	
							End of boring at 12 feet bgs	
							fill possible ?	
							e	
							ll.s ?	
620	15							
615	20							

Report: ENV_3CS_3COL: File: DETREX9-7-05.GPJ: 2/1/2006 GP-504

URS

Project: Detrex**Project Location: 1100 State Road, Ashtabula, Ohio****Project Number: 13810732****Log of Boring GP-505**

Sheet 1 of 1

Date(s) Drilled	9/7/05	Logged By	J. Kaminski	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	12.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	633.29 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Boring Completion	Bentonite Chips
Coordinate Location	N 816394.7 E 2471465.2		Boring Location	Refer to Site Plan	

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm.			
0					0.4		Hard, dry, brown, SILT, trace clay and fine sand, trace gray mottles	
				48	0.8			
630					0.8			
	5			48	0.4			
							Dense, dry, brown, silty SAND, with clay partings	
625			0810					Sample from 8-10 feet submitted for laboratory analysis.
	10			19	1.0			
							Soft, wet, gray, clayey SILT	
							Hard, dry, gray, silty CLAY, trace gravel (TILL)	
							End of boring at 12 feet bgs	
620								
	15							
615								
20								

Report: ENV_3CS_3COL: File: DETREX97-05.GPJ: 2/1/2006 GP-505

URS

Project: Detrex**Project Location: 1100 State Road, Ashtabula, Ohio****Project Number: 13810732****Log of Boring GP-506**

Sheet 1 of 1

Date(s) Drilled	9/7/05	Logged By	J. Berk	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	12.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	630.55 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Boring Completion	Bentonite Chips
Coordinate Location	N 816363.6 E 2471564.2		Boring Location	Refer to Site Plan	

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm.			
630	0						Hard, brown and gray mottled, silty CLAY	
				48	0.8			
					0.8		Dense, dry, brown, silty SAND becomes interbedded with gray, CLAY	
	5				0.8		Hard, moist, brown, silty CLAY, trace fine sand	
625				48			Loose, wet, brown, silty SAND	
					0.6		Firm, dry, brown, SILT, trace clay	
							Firm, wet, gray, SILT	
	10			36	0.8		Soft, moist, brown and gray mottled, silty CLAY	
620					0.0			
							End of boring at 12 feet bgs	
	15						no fill ?	
615								
	20							

Report: ENV_3CS_3COL; File: DETREX8-7-05.GPJ; 2/1/2008 GP-506

URS

Project: Detrex

Project Location: 1100 State Road, Ashtabula, Ohio

Project Number: 13810732

Log of Boring GP-507

Sheet 1 of 1

Date(s) Drilled	9/7/05	Logged By	J. Kaminski	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	12.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	633.54 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Boring Completion	Bentonite Chips
Coordinate Location	N 816408.5 E 2470926.5	Boring Location	Refer to Site Plan		

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, Inches	Headspace, ppm.			
0							Hard, dry, brown, silty CLAY, trace gray mottles, brittle	
				48	0.6			
					0.8			
630								
5				48	0.6			
					0.6			
							Hard, dry, brown, clayey SILT	
							wet	
625					0.8			
10				48	0.8			
							becomes gray	
							Hard, dry, gray, clayey SILT (TILL)	
							End of boring at 12 feet bgs	
620								
15								
615								
20								

Report: ENV_3CS_3COL: File: DETREX9-7-05.GPJ: 2/1/2006 GP-507

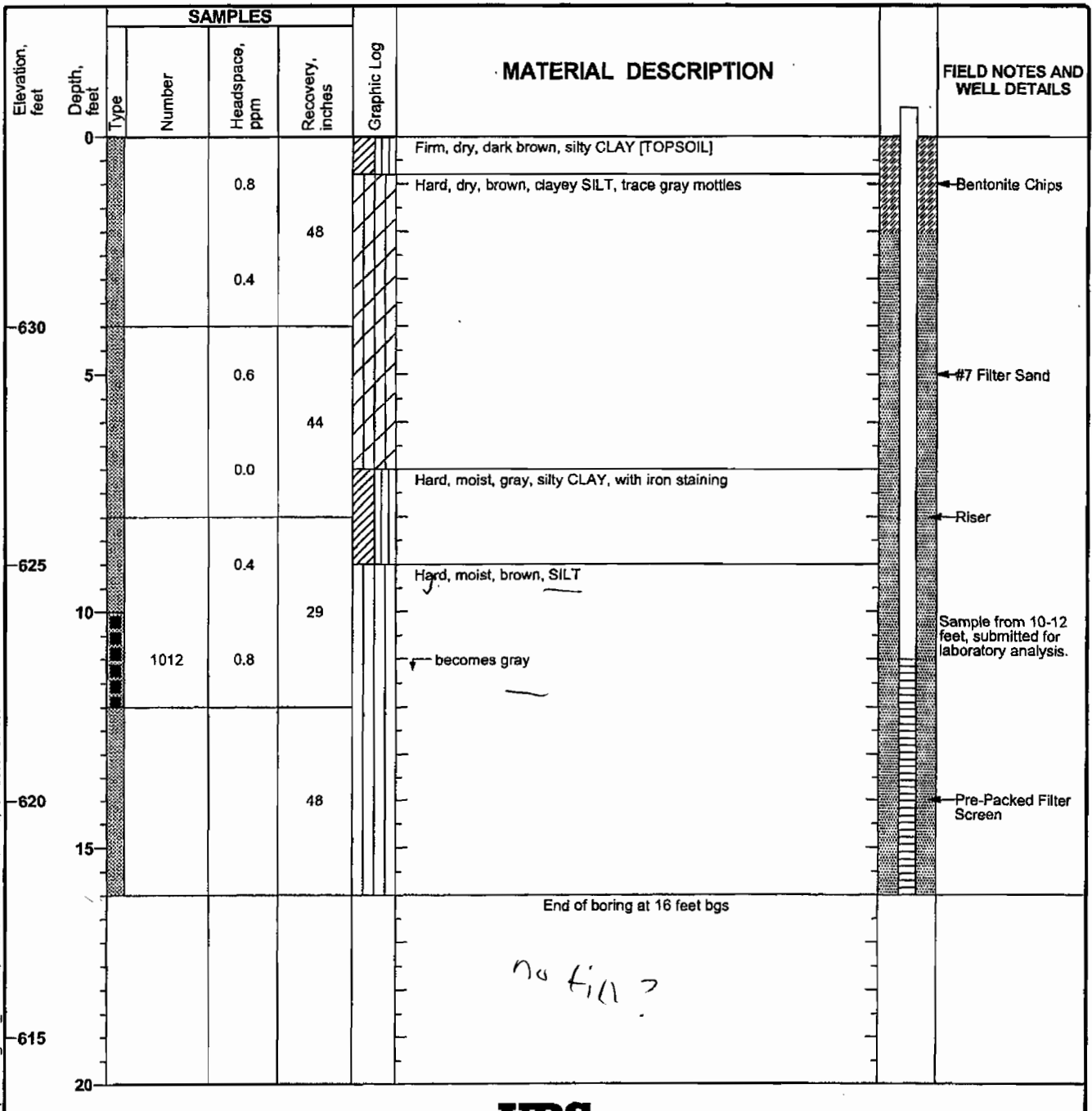
URS

Project: Detrex
Project Location: 1100 State Road, Ashtabula, Ohio
Project Number: 13810732

Log of Boring GP-508

Sheet 1 of 1

Date(s) Drilled	9/7/05	Logged By	J. Kaminski	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	16.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	634.00 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Top of Casing Elevation	
Coordinate Location	N 816439.8 E 2471027.8	Boring Location	Refer to Site Plan		



Report: ENV_3BW_MARION; File: DETREX9-7-05.GPJ; 2/12/2006 GP-508

URS

Project: Detrex

Project Location: 1100 State Road, Ashtabula, Ohio

Project Number: 13810732

Log of Boring GP-509

Sheet 1 of 1

Date(s) Drilled	9/8/05	Logged By	J. Berk	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	12.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	633.24 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Boring Completion	Bentonite Chips
Coordinate Location	N 816295.6 E 2471233.8		Boring Location	Refer to Site Plan	

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm.			
0							Firm, dry, dark brown, silty CLAY [TOPSOIL]	
				45	0.0		Hard, dry, light brown, silty CLAY, trace sand and fine gravel	
							becomes firm, moist	
630					0.0			
				48	0.0		Firm, moist, brown and gray mottled, silty CLAY, with roots	
							becomes without roots	
					0.0			
625							becomes brown and dark gray mottled	
				45	0.0		Soft, wet, brown, clayey SILT	
10							becomes hard	
					0.0		Soft, wet, gray, silty CLAY	
							becomes hard	
							End of boring at 12 feet bgs	
620								
15								
615								
20								

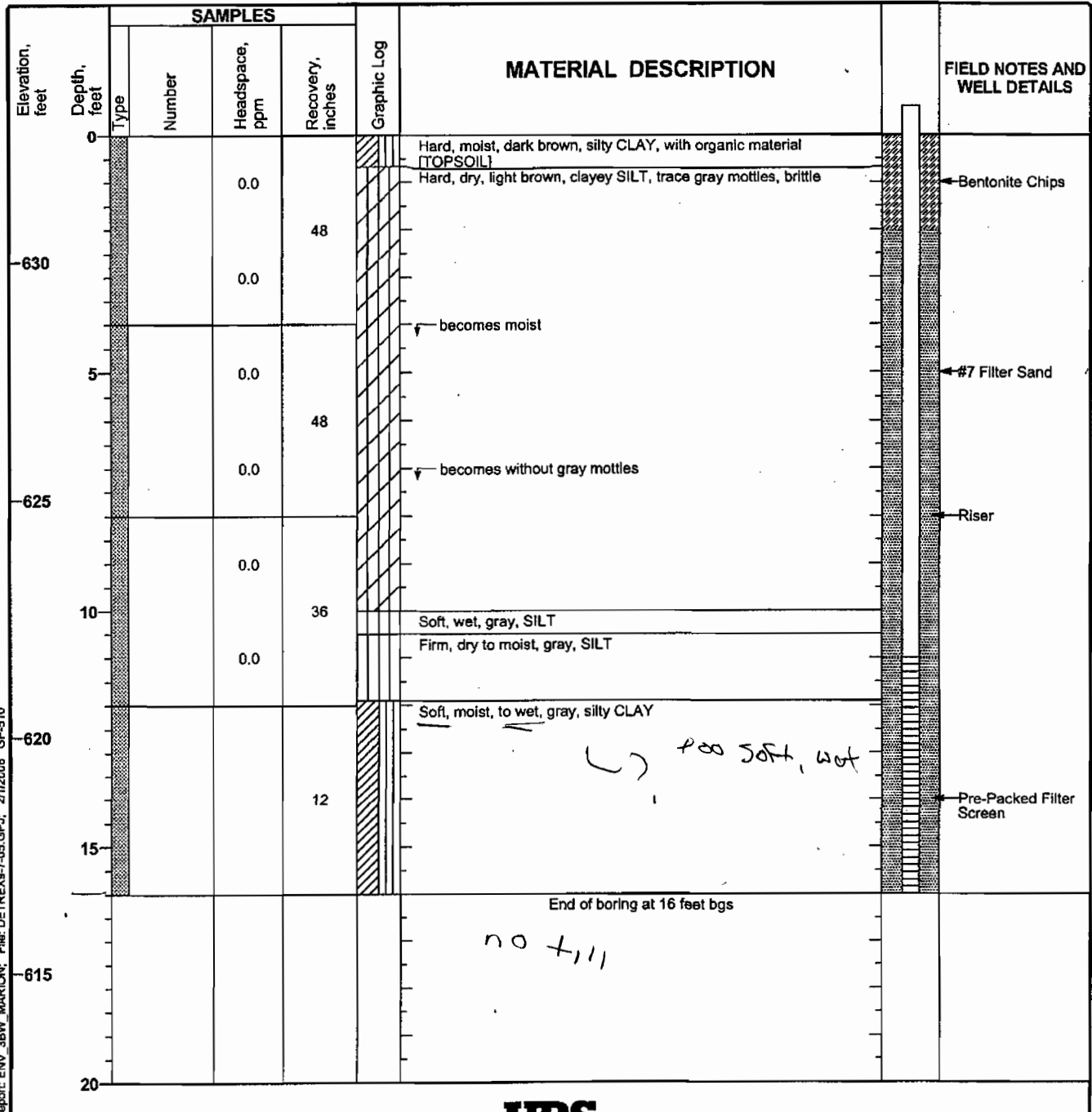
Report: ENV_3CS_3COL; File: DETREX8-7-05.GPJ; 2/1/2006 GP-509

URS

Project: Detrex**Project Location: 1100 State Road, Ashtabula, Ohio****Project Number: 13810732****Log of Boring GP-510**

Sheet 1 of 1

Date(s) Drilled	9/8/05	Logged By	J. Kaminski	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	16.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	632.66 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Top of Casing Elevation	
Coordinate Location	N 816287.6 E 2471345.5		Boring Location	Refer to Site Plan	



Report: ENV_3BW_MARION; File: DETREX-7-05.GPJ; 2/12/2006 GP-510

URS

Project: Detrex**Project Location: 1100 State Road, Ashtabula, Ohio****Project Number: 13810732****Log of Boring GP-511**

Sheet 1 of 1

Date(s) Drilled	9/8/05	Logged By	J. Kaminski	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	12.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	632.00 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Boring Completion	Bentonite Chips
Coordinate Location	N 816260.0 E 2471454.3		Boring Location	Refer to Site Plan	

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm.			
0					0.0		Firm, dry, light brown, silty CLAY, with gray mottles, brittle	
630			32		0.0		Firm, dry, light brown, SILT, trace fine sand and gray mottles	
							becomes without gray mottles	
5			44		0.0		soft, wet, inter layered	
625					0.0		Hard, dry, brown, clayey SILT, trace fine sand layers	
					0.0		Firm, moist, gray, silty CLAY	
10			36					
620							End of boring at 12 feet bgs	
15								
615								
20								

Report: ENV_3CS_3COL; File: DETREX9-7-05.GPJ; 2/12/2006 GP-511

URS

Project: Detrex
Project Location: 1100 State Road, Ashtabula, Ohio
Project Number: 13810732

Log of Boring GP-512

Sheet 1 of 1

Date(s) Drilled	9/8/05	Logged By	J. Kaminski	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	12.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	632.37 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Boring Completion	Bentonite Chips
Coordinate Location	N 816235.4 E 2471556.5		Boring Location	Refer to Site Plan	

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm.			
0							Firm, dry, brown and gray mottled, silty CLAY, trace fine sand, brittle	
630				42	0.0			
					0.0			
5					0.0		Loose, dry, brown, silty SAND	
				36	0.0			
625					0.0		Hard, moist, brown, clayey SILT, with wet, fine sand stringers	
					0.0			
10				12			Hard, dry, gray, silty CLAY [TILL]	
620							End of boring at 12 feet bgs	
15								maybe fill @ 10'
615								
20								

Report: EW_3CS_3COL: File: DETREX9-7-05.GPJ: 2/1/2006 GP-512

URS

Project: Detrex**Project Location: 1100 State Road, Ashtabula, Ohio****Project Number: 13810732****Log of Boring GP-513**

Sheet 1 of 1

Date(s) Drilled	9/8/05	Logged By	J. Berk	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	12.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	633.72 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Boring Completion	Bentonite Chips
Coordinate Location	N 816214.4 E 2471671.8	Boring Location	Refer to Site Plan		

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm.			
0							TOPSOIL	
				48	0.0		Hard, dry, light brown and gray mottled, silty CLAY, with roots	
					0.0			
630							becomes stiff	
	5			48	0.0			
					0.0		4-inch wet, silt seam	
					0.0			
625								
	10			36	0.0		Wet, brown, clayey SILT	
					0.0		Gray, wet, silty SAND	
							End of boring at 12 feet bgs	
620								
	15							
615								
	20							

Report: ENV_3CS_3COL: File: DETREX9-7-05.GPJ; 2/1/2006 GP-513

URS

Project: Detrex**Project Location: 1100 State Road, Ashtabula, Ohio****Project Number: 13810732****Log of Boring GP-514**

Sheet 1 of 1

Date(s) Drilled	9/8/05	Logged By	J. Berk	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	16.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	634.21 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Boring Completion	Bentonite Chips
Coordinate Location	N 816203.1 E 2471773.7	Boring Location	Refer to Site Plan		

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm.			
0							TOPSOIL	
				48	0.0		Hard, dry, light brown and gray mottled, silty CLAY, some sand	
					0.0			
630	5			48	0.0		Brown, clayey SILT	
					0.0		Hard, dry, brown, SILT, trace clay	
625	10			30	0.0		Soft, wet, brown, clayey SILT	
							Stiff, moist, gray, SILT	
							becomes wet	
620	15			45	0.0		Firm to hard, moist, gray, silty CLAY (TILL)	
							End of boring at 16 feet bgs	
							possible fill	
615	20							

Report: ENV_30S_3COL: File: DETREX9-7-05.GPJ; 2/1/2006 GP-514

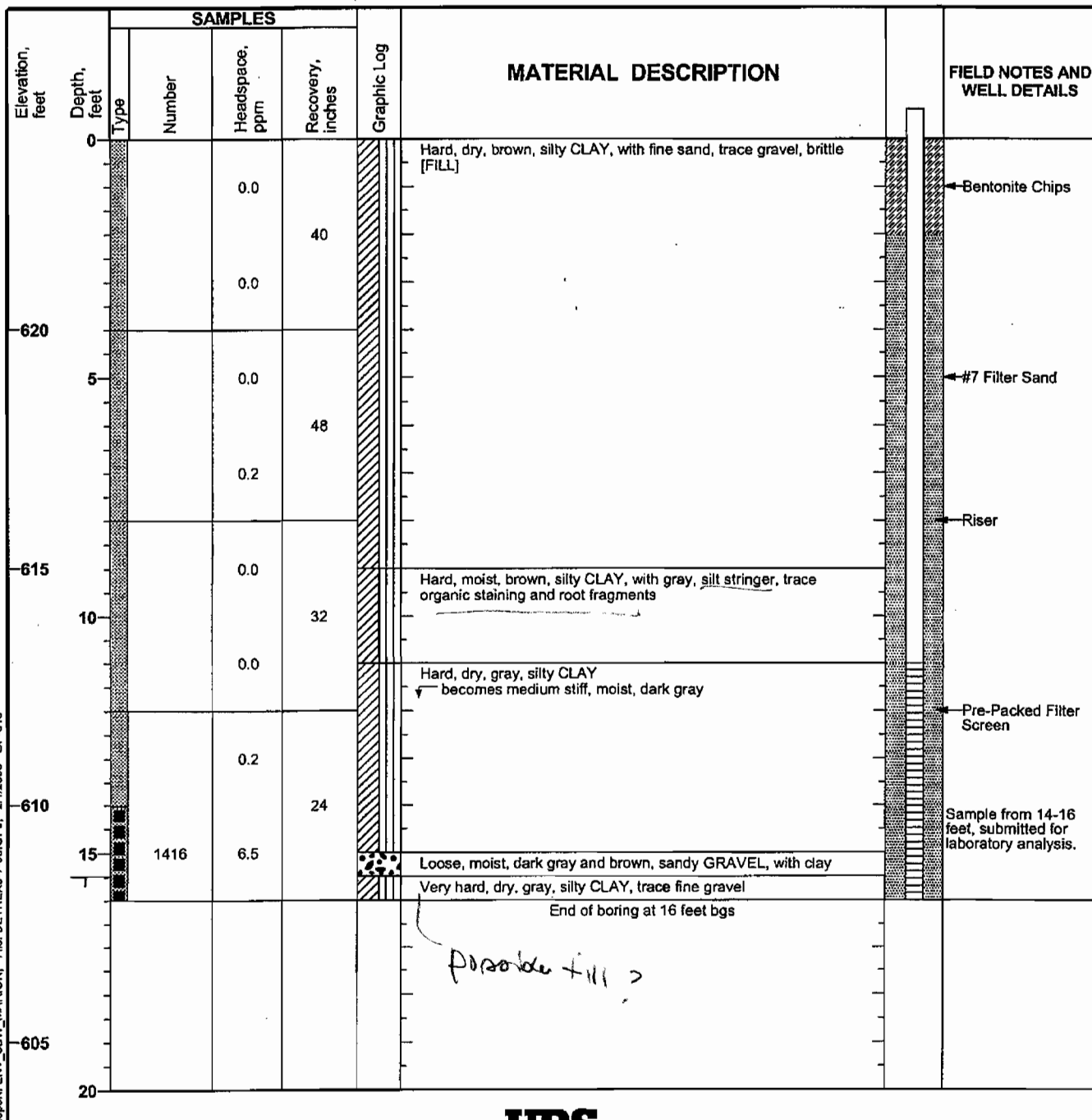
URS

Project: Detrex
Project Location: 1100 State Road, Ashtabula, Ohio
Project Number: 13810732

Log of Boring GP-516

Sheet 1 of 1

Date(s) Drilled	9/8/05	Logged By	J. Kaminski	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	16.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	623.98 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Top of Casing Elevation	
Coordinate Location	N 815860.1 E 2471494.0	Boring Location	Refer to Site Plan		



Report: ENV_3BW_MARION; File: DETREX9-7-05.GPJ; 2/1/2006 GP-516

URS

Project: Detrex**Project Location: 1100 State Road, Ashtabula, Ohio****Project Number: 13810732****Log of Boring GP-517**

Sheet 1 of 1

Date(s) Drilled	9/8/05	Logged By	J. Kaminski	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	12.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	621.52 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Boring Completion	Bentonite Chips
Coordinate Location	N 815833.7 E 2471484.6		Boring Location	Refer to Site Plan	

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm.			
0							Hard, dry, brown, silty CLAY, with very fine gravel and sand	
620				29	0.2		becomes moist	
	5			26	0.2			
615					0.2			
	10			44	0.0		Very hard, dry, gray, silty CLAY, with fine gravel [TILL] becomes dry, brittle, with fine to medium gravel and shale fragments	
610							End of boring at 12 feet bgs	
	15							
605								
	20							

Report ENV_303_SCOL; File: DETREX8-7-05.GPJ; 2/12/2006 GP-517

URS

Project: Detrex

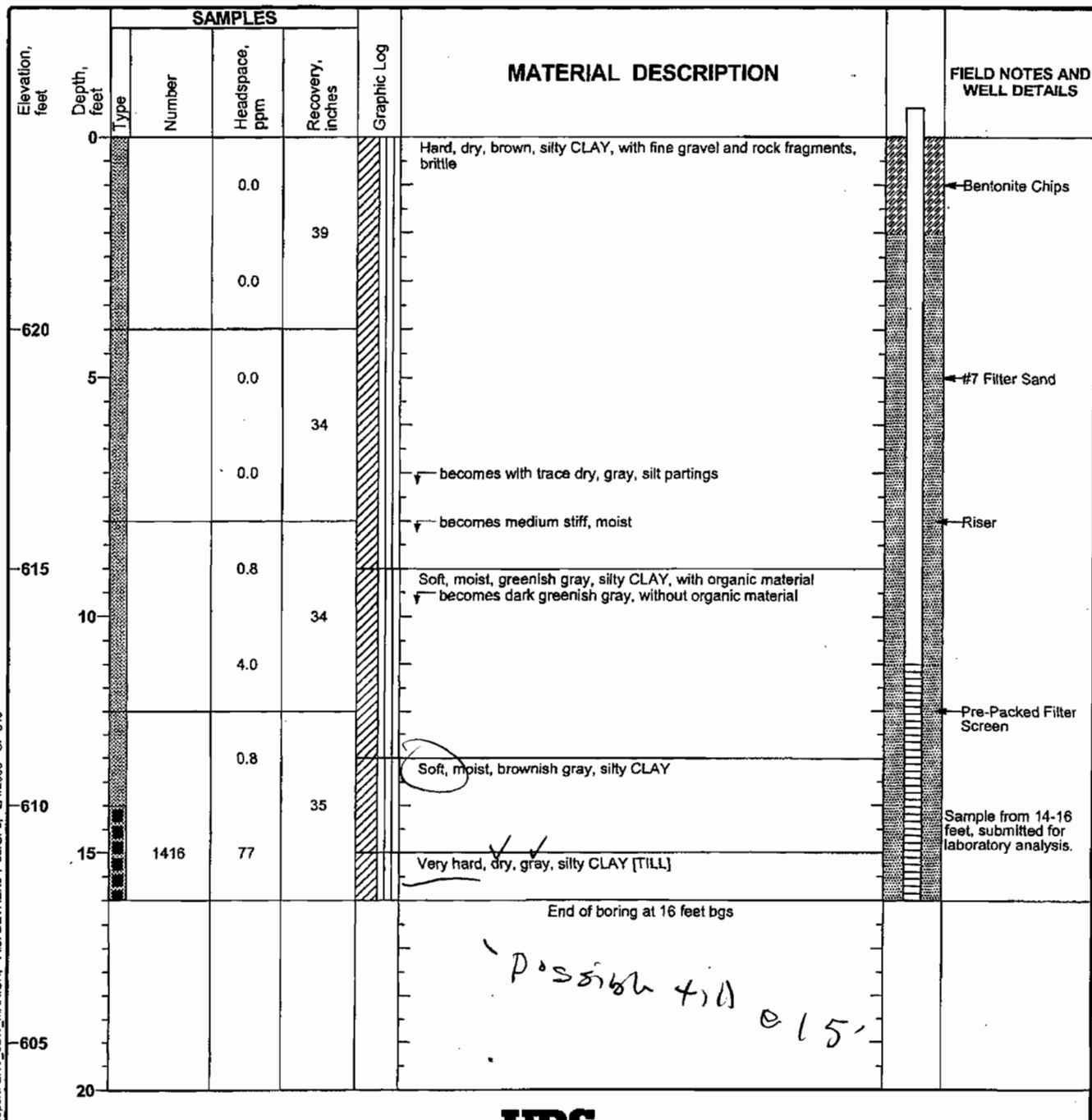
Project Location: 1100 State Road, Ashtabula, Ohio

Project Number: 13810732

Log of Boring GP-518

Sheet 1 of 1

Date(s) Drilled	9/8/05	Logged By	J. Kaminski	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	16.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	624.00 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Top of Casing Elevation	
Coordinate Location	N 815876.2 E 2471470.8	Boring Location	Refer to Site Plan		



Report: ENV_3BW_MARION; File: DETREX9-7-05.GPJ; 2/1/2006 GP-518

URS

Project: Detrex**Project Location: 1100 State Road, Ashtabula, Ohio****Project Number: 13810732****Log of Boring GP-519**

Sheet 1 of 1

Date(s) Drilled	9/9/05	Logged By	J. Berk	Checked By	K. Mast
Drilling Method	Direct Push	Drill Bit Size/Type	4-foot long geoprobe sampler	Total Depth of Borehole	12.0 feet
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Summit Drilling, Inc.	Surface Elevation	636.69 above MSL
Groundwater Level and Date Measured		Sampler Types	Acetate Liner	Boring Completion	Bentonite Chips
Coordinate Location	N 817085.2 E 2471807.2		Boring Location	Refer to Site Plan	

Elevation, feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Recovery, inches	Headspace, ppm.			
0							Firm, dry, light brown and gray mottled, silty CLAY	Sample from 0-2 feet submitted for laboratory analysis.
635			0002	21				
				48				
			0204	70				Sample from 2-4 feet submitted for laboratory analysis.
							becomes, moist, brown with little gray mottling	
5				0.0				
				48				
630				12			becomes firm, moist, dark brown, with dark gray mottling, organic matter	
							Dry, brown, SILT	
				12			Hard, moist, clayey SILT, with horizontal rust lamination	
10				36				
625							Dry, light gray, silty CLAY (TILL)	
							End of boring at 12 feet bgs	
15								
620								
20								

Mo. < 1/2
to 1/2
boring nearly

Report: ENV_3CS_3COL: File: DETREX9-7-05.GPJ; 2/1/2006 GP-519

URS

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring DPT-01

Sheet 1 of 1

Date(s) Drilled	9/5/06	Logged By	J. Berk	Checked By	D. Gray
Drilling Method & Drill Bit size/type	Geoprobe geoprobe	Coordinates	817511.3146 2439055.034	Total Depth of Borehole	12.0' bgs
Drill Rig Type	Geoprobe 5400 bobcat mounted	Drilling Contractor	Northcoast Drilling	Elevation	636.68'
Location	North of Detrex	Sampling Method(s)	Macro-Core® sampler	Borehole Completion	bentonite
Groundwater Level and Date Measured	6.35 feet bgs on 9/18/2006			Top of Casing Elevation	640.96

Elevation feet	SAMPLES				MATERIAL DESCRIPTION	Well Installation Schematic	FIELD NOTES - AND WELL DETAILS
	Type	Recovery, inches	PID, OVA, ppm	Graphic Log			
0					Very stiff, gray and tan, moist, silty CLAY, (CL) some fine to coarse gravel, some fine to medium gravel, (Fill)		Begin Drilling @ 9/5/06
		48.0	2/1		Medium stiff, gray mottled brown, moist, silty CLAY, (CL) trace organics, trace fine sand, low plasticity, (Fill)		Bentonite Seal
			3/39		Soft, dark gray mottled black, moist, silty CLAY, (OH) little rock fragments, medium plasticity, (Fill)		1" PVC Riser Sample submitted for laboratory analysis
5			2/3		Loose, light brown, moist, SAND, (SW) fine grained, well graded		
		44.0	1/4		Medium dense, gray mottled light brown, moist, silty SAND, (SM) some fine to coarse gravel, fine to medium grained, poorly graded		
630					Medium stiff, brown mottled gray, moist, silty CLAY, (CL) some medium to coarse gravel, non plastic		
					Loose, brown, saturated, gravelly SAND, (SM) fine to coarse grained, poorly graded		1" 0.010 PVC Slotted Screen
10		45.0	0/1		Medium stiff, brown, moist, silty CLAY, (CL) little fine to medium gravel, medium plasticity		water encountered at 9 feet
							Collapse
					End of Boring at 12' bgs Installed Monitoring Well		End Drilling on 9/5/06
15							
620							
20							
25							
610							
30							
35							

Report: 1_URS_CLEV_2COL_GEOPROBE_WELL_XS; File: D.GPJ; 11/30/2006 DPT-01

URS

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring IT0601

Sheet 1 of 2

Date(s) Drilled and Installed	8/24/06 1300	Geologist	J. Bark	Reviewer	
Drilling Method	Hollow Stem Auger	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	32.00' bgs
Sampling Method		Drill Bit Size/Type:	4-1/4" ID HSA	Approximate Surface Elevation	
Drill Rig Type:	Truck-mounted CME	Groundwater Level(s)		Hammer Data	140# auto hammer
Boring Location:	Center of line				

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Sampling Resistance Blows/ft	Recovery, inches	PID, OVA, ppm			
	0			3				Soft, light gray, moist, clayey SILT, (CL-ML) trace fine sand, low plasticity	Begin drilling @ 8/24/06 1300
				4				Medium stiff, light tan, moist, CLAY, (CL) low plasticity	
				7	22.0	0			
				11					
	2			4				Medium stiff, light brown light gray, moist, CLAY, (CL) low plasticity	
				4					
				8	1.5	0			
				9					
	4			5				Soft, light gray, CLAY, (CL) medium plasticity, (Fill)	
				8					
				7	23.0	0			
				5					
	6			2				Light gray, moist, silty CLAY, (CL-ML) some fine sand	
				2					
				4	17.0	0			
				5					
	8			2				Medium stiff, light brown light gray, moist, silty CLAY, (CL-ML) low plasticity	
				2					
				4	21.0	0			
				5					
	10			5				Light gray, (CL-ML) low plasticity	
				5					
				5		0			
				6					
	12			5				Medium stiff, gray, moist, silty CLAY, (CL-ML) trace rock fragments, low plasticity, (fill)	
				7		0			
				9					
	14			4				Medium stiff, gray, moist, silty CLAY, (CL-ML) trace rock fragments, low plasticity, (fill)	Sample submitted for laboratory analysis ()
				6					
				7	24.0	0			
				9					Sample time 1415 ()
	16			4				Light gray, moist, sandy CLAY, (CL-ML) trace silty sand, low plasticity, (fill)	
				9					
				10	24.0	0			
				11					Coarse sand fine gravel ()
	18			6				Soft, gray, silty CLAY, (CL-ML) medium plasticity, (fill)	
				7					
				8					
				10					
	20								

Report: URS_CLEV_3COL_S_Fac DETREX091206.GPJ, 9/20/2008 IT0601

Q 12-14-
 12-14-
 12-14-

Project: Detrex - Detrex
 Project Location: 1100 State Rd
 Project Number: 13811443

Log of Boring IT0601

Sheet 2 of 2

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Sampling Resistance Blows/ft	Recovery, inches	PID, OVA, ppm			
20				3				Soft, gray, moist, silty CLAY, (CL-ML) trace fine gravel, trace silt, medium plasticity, (till)	
			4		22.0	0			
			7						
			8						
22			4					Medium stiff, gray, moist, silty CLAY, (CL-ML) trace cobbles, trace silt, medium plasticity, (till)	
			8		24.0	0			
			12						
			13						
24			5					Medium stiff, gray, moist, silty CLAY, (CL-ML) trace cobbles, trace silt, medium plasticity, (till)	
			10		24.0	0			
			12						
			16						
26			5					Stiff, gray, moist, silty CLAY, (CL-ML) trace cobbles, trace silt, medium plasticity, (till)	
			7		24.0	0			
			10						
			12						
28			6					Stiff, gray, moist, silty CLAY, (CL-ML) trace cobbles, trace silt, medium plasticity, (till)	
			10		24.0	0			
			12						
			16						
30								Light gray, (CL-ML) low plasticity, (till)	
32								End of Boring at 32' bgs	End drilling @
34									
36									
38									
40									
42									

Project: - Detrex
Project Location:
Project Number: Detrex

Log of Boring IT0602

Sheet 1 of 1

Date(s) Drilled and Installed	8/25/06 0917	Geologist	J. Berk	Reviewer	
Drilling Method	Hollow Stem Auger	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	20.00 bgs
Sampling Method		Drill Bit Size/Type	4-1/4" ID HSA	Approximate Surface Elevation	
Drill Rig Type	Truck-mounted CME	Groundwater Level(s)		Hammer Data	140# auto hammer
Boring Location:					

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Sampling Resistance Blows/ft	Recovery, inches	PID, OVA, ppm			
0						3		Grayish brown, moist, silty CLAY Medium stiff, light tan light gray, silty CLAY	Begin drilling @ 8/25/06 0917
2						5		Medium stiff, light tan light gray, silty CLAY	
4						6		Light brownish tan, clayey SILT	Moist silt seam ()
6						0		Medium stiff, light tan light gray, silty CLAY	
8						0		Gray, moist, silty CLAY, medium plasticity	Silt seam. Wet ()
10						0		Gray, moist, silty CLAY, trace fine to coarse gravel, low plasticity	
12						0		Gray, moist, silty CLAY, trace fine to coarse gravel, low plasticity	
14						0		Gray, moist, silty CLAY, trace fine to coarse gravel, trace rock fragments, low plasticity, (till)	
16						0		Gray, moist, gravelly CLAY, with rock fragments, (till)	
18						10		Gray, moist, gravelly CLAY, with rock fragments, (till)	
20						10		Gray, moist, gravelly CLAY, with rock fragments, low plasticity, (till)	Sample submitted for laboratory analysis ()
22								End of Boring at 20' bgs	End drilling @ 8/25/06 1012
24									
26									
28									
30									

Project: - Detrex
Project Location:
Project Number: Detrex

Log of Boring IT0603

Sheet 1 of 1

Date(s) Drilled and Installed	8/25/06 1206	Geologist	J. Berk	Reviewer	
Drilling Method	Hollow Stem Auger	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	16.00 ' bgs
Sampling Method		Drill Bit Size/Type:	4-1/4" ID HSA	Approximate Surface Elevation	632.00'
Drill Rig Type:	Truck-mounted CME	Groundwater Level(s)		Hammer Data	140# auto hammer
Boring Location:					

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Sampling Resistance Blows/ft	Recovery, inches	PID, OVA, ppm			
	0							Dark gray, moist, silty CLAY, medium plasticity	Begin drilling @ 8/25/06 1206
	1		1					Light brown light gray, moist, silty CLAY, low plasticity, mottled	
	2		2					Light brown light gray, moist, silty CLAY, low plasticity, mottled	
630	2		2					Light brown light gray, moist, silty CLAY, low plasticity, mottled	
	3		3						
	4		4						
	4		1					Light brown, wet, silty SAND, trace clay	
	5		2					Light brown, wet, silty SAND, trace clay	
	6		4					Soft, light brown tan, moist, clayey SILT, laminated, iron oxide staining	
	6		5						Helper spilled fuel on supplies do not pass go-go directly to jail. ()
625	6		2					Soft, light brown tan, wet, clayey SILT, laminated, no staining	
	7		4						
	8		4						Sample submitted for laboratory analysis ()
	8		6					Gray, moist, clayey SILT, trace fine to medium gravel, low plasticity	
	9		2					Medium stiff, gray, moist, silty CLAY, little rock fragments, non plastic, (till)	
	10		4						
	10		7					Medium stiff, gray, moist, silty CLAY, little rock fragments, non plastic, (till)	
	11		10						
	12		3					Very stiff, gray, moist, silty CLAY, little rock fragments, non plastic, (till)	
620	12		4		8.0	0			
	13		7						
	14		2					Very stiff, gray, moist, silty CLAY, little rock fragments, non plastic, (till)	
	15		4						
	16		5						
	16		7		24.0	10			End of Boring at 16' bgs
615	16								
	18								
	20								
	22								
610	22								
	24								
	26								
	28								
605	28								
	30								
	30								

Project: - Detrex
Project Location:
Project Number: Detrex

Log of Boring IT0604

Sheet 1 of 1

Date(s) Drilled and Installed	8/28/06 1205	Geologist	J. Berk	Reviewer	
Drilling Method	Hollow Stem Auger	Drilling Contractor	Northcoast Drilling	Total Depth of Borehole	14.00' bgs
Sampling Method		Drill Bit Size/Type	3-1/4" ID HSA	Approximate Surface Elevation	634.00'
Drill Rig Type	Truck-mounted CME	Groundwater Level(s)		Hammer Data	140# auto hammer
Boring Location	Interceptor trench				

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Sampling Resistance Blows/ft	Recovery, inches	PID, OVA, ppm			
	0			2				Brown, moist, silty CLAY, (CL-ML) trace organics	Begin drilling @ 8/28/06 1205
				3				Medium stiff, light grayish brown light gray, moist, silty CLAY, (CL-ML) trace organics, mottled	
				7	24.0	3			
	2			2				Medium stiff, light grayish brown light gray, moist, silty CLAY, (CL-ML) trace organics, mottled	Sample submitted for laboratory analysis () Becomes wet ()
				4				Medium stiff, light brown light gray, very moist, clayey SILT, (CL-ML) trace organics, low plasticity, mottled	
				4	19.0	3			
				5				Medium stiff, light brown light gray, saturated, clayey SILT, (CL-ML) trace organics, low plasticity, mottled	
630	4			1				Medium stiff, light brown light gray, saturated, clayey SILT, (CL-ML) trace organics, low plasticity, mottled	
				2				Medium stiff, light grayish brown light gray, moist, silty CLAY, (CL-ML) trace manganese, mottled	
				5	19.0	1			
	6			1				Gray, moist, clayey SILT, (CL-ML) low plasticity	
				2					
				3		0			
				4					
	8			1				Gray, moist, clayey SILT, (CL-ML) low plasticity	End drilling @ 8/28/06 1256
625				2		2		Stiff, gray, moist, silty CLAY, (CL-ML) little fine to medium gravel, low plasticity	
				4					
				5					
	10			3				Stiff, gray, moist, silty CLAY, (CL-ML) some fine to medium gravel, with rock fragments, low plasticity, (till)	
				7	17.0	1			End of Boring at 14' bgs Dumile 8.5-10
				7					
				8					
	12			3				Stiff, gray, moist, silty CLAY, (CL-ML) some fine to medium gravel, with rock fragments, low plasticity, (till)	
				4		1			
				5					
				6					
620	14								
	16								
	18								
615	20								
	22								
610	24								
	26								
605	28								
	30								

Project: - Detrex
 Project Location:
 Project Number: Detrex

Log of Boring IT0605

.Sheet 1 of 1

Date(s) Drilled and Installed	Geologist J. Berk	Reviewer
Drilling Method Hollow Stem Auger	Drilling Contractor Northcoast Drilling	Total Depth of Borehole 16.00' bgs
Sampling Method	Drill Bit Size/Type: 3-1/4" ID HSA	Approximate Surface Elevation 636.8ft'
Drill Rig Type: Truck-mounted CME	Groundwater Level(s)	Hammer Data 140# auto hammer
Boring Location: East end of IT line		

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Sampling Resistance Blows/ft	Recovery, inches	PID, OVA, ppm			
0	0		1					Soft, dark brown, moist, silty CLAY, (CL-ML) with organics	Begin drilling @ Light rain during drilling and well installation ()
	1		2		14.0	2		Medium stiff, light brown light gray, moist, silty CLAY, (CL-ML) with manganese, low plasticity, mottled, iron oxide staining	
	2		2					Soft, dark brown, moist, silty CLAY, (CL-ML) with roots	
	3		5		23.0	2		Medium stiff to soft, light brown light gray, moist, silty CLAY, (CL-ML) trace roots, low plasticity, mottled	
	4		2					Medium stiff, light brown light gray, wet, clayey SILT, (CL-ML) low plasticity, mottled, no staining	Sample submitted for laboratory analysis ()
	5		3		20.0	0			
	6		2					Medium stiff, light brown light gray, wet, clayey SILT, (CL-ML) low plasticity, mottled, no staining	
	7		4		20.0	1			
	8		3					Medium stiff, light brown light gray, wet, clayey SILT, (CL-ML) low plasticity, mottled, no staining	
	9		4		22.0	1		Medium stiff, gray, moist, silty CLAY, (CL-ML) trace fine to medium gravel, medium plasticity	
	10		1					Medium stiff, gray, moist, silty CLAY, (CL-ML) trace fine to medium gravel, trace rock fragments, medium plasticity, (ill)	
	11		2			1			
	12		4					Medium stiff, gray, moist, silty CLAY, (CL-ML) trace fine to medium gravel, trace rock fragments, medium plasticity, (ill)	End drilling @ 8/28/06 1400
	13		1		24.0				
	14		2					Medium stiff, gray, moist, silty CLAY, (CL-ML) trace fine to medium gravel, trace rock fragments, medium plasticity, (ill)	
	15		3						
	16		4						End of Boring at 16' bgs D. 8.5
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								
	26								
	27								
	28								
	29								
	30								

Project: - Detrex
 Project Location:
 Project Number: Detrex

Log of Boring IT0606

Sheet 1 of 1

Date(s) Drilled and Installed	Geologist J. Berk	Reviewer
Drilling Method Hollow Stem Auger	Drilling Contractor Northcoast Drilling	Total Depth of Borehole 14.00 ' bgs
Sampling Method	Drill Bit Size/Type: 3-1/4" ID HSA	Approximate Surface Elevation
Drill Rig Type: Truck-mounted CME	Groundwater Level(s)	Hammer Data 140# auto hammer
Boring Location:		

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Sampling Resistance Blows/6"	Recovery, inches	PID, OVA, ppm			
0	0		2	18.0	1			Dark brown, dry, silty CLAY, (CL-ML) little roots	Begin drilling @
	1		4					Medium stiff, light gray light brown, silty CLAY, (CL-ML) trace roots, medium plasticity, mottled	
	2		3	21.0	0			Medium stiff, light gray light brown, silty CLAY, (CL-ML) trace roots, medium plasticity, mottled	
	3		4					Soft, light brown, very moist, silty CLAY, (CL-ML) trace fine sand, medium plasticity	
	4		2		1			Medium stiff, light brown light gray, moist, silty CLAY, (CL-ML) trace fine sand, trace, low plasticity, mottled	
	5		3					Soft, light brown, very moist, silty CLAY, (CL-ML) little fine sand, trace coarse gravel, low plasticity	
	6		4	24.0	1			Medium stiff, light tan light brown, moist, silty CLAY, (CL-ML) trace manganese, medium plasticity, laminated	
	7		4						
	8		3	21.0	0			Medium stiff, gray, moist, silty CLAY, (CL-ML)	
	9		3					Soft brown, very moist, CLAY (CL)	
	10		7					Medium stiff, gray, moist, silty CLAY, (CL-ML) some rock fragments, little fine to medium gravel, medium plasticity, (till)	Completed boring on second day. Weather light rain. ()
	11		2	22.0	0			Medium stiff, gray, moist, silty CLAY, (CL-ML) some rock fragments, little fine to medium gravel, medium plasticity, (till)	
	12		4						
	13		6	24.0	0			Medium stiff to stiff, gray, moist, silty CLAY, (CL-ML) some rock fragments, with fine to medium gravel, medium plasticity, (till)	
	14		9						End drilling @
	15		12						
	16							End of Boring at 14' bgs	
	18								
	20								
	22								
	24								
	26								
	28								
	30								

*Dr. Mike King
 C.E.S.*

Project: - Detrex
 Project Location:
 Project Number: Detrex

Log of Boring IT0607

Sheet 1 of 1

Date(s) Drilled and Installed	Geologist J. Berk	Reviewer
Drilling Method Hollow Stem Auger	Drilling Contractor Northcoast Drilling	Total Depth of Borehole 14.00' bgs
Sampling Method	Drill Bit Size/Type: 3-1/4" ID HSA	Approximate Surface Elevation
Drill Rig Type: Truck-mounted CME	Groundwater Level(s)	Hammer Data 140# auto hammer
Boring Location:		

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Sampling Resistance Blows/6"	Recovery, Inches	PID, OVA, ppm			
	0		1					Soft, brown, very moist, silty CLAY, (CL-ML) trace organics, medium plasticity	Begin drilling @
			2					Medium stiff, light orangeish brown, moist, silty CLAY, (CL-ML) trace organics, low plasticity, mottled	
	2		3					Medium stiff, light grayish brown, moist, silty CLAY, (CL-ML) trace coarse sand, medium plasticity, mottled	
			4						
	4		5						
			3					Soft, pale orangeish brown, very moist, sandy SILT, (MH) mottled, iron oxide staining	Sample submitted for laboratory analysis ()
			4						
	6		6			1			
			7						
	8		3					Medium dense, pale grayish brown, moist, sandy SILT, (MH) trace manganese, low plasticity, laminated, iron oxide staining, (Lacustrine)	
			5						
			9			2			
	8		8						
			2					Stiff, light gray, moist, silty CLAY, (CL-ML) medium plasticity, (Till)	
			2						
	10		4			0			
			5						
			2					Medium stiff, light gray, moist, silty CLAY, (CL-ML) trace rock fragments, medium plasticity, (Till)	
			5			0			
	12		6						
			3					Medium stiff, light gray, moist, silty CLAY, (CL-ML) trace rock fragments, medium plasticity, (Till)	
			4						
	14		4			0			
			5						
								End of Boring at 14' bgs	End drilling @
	16								
	18								
	20								
	22								
	24								
	26								
	28								
	30								

Project: - Detrex
 Project Location:
 Project Number: Detrex

Log of Boring IT0608

Sheet 1 of 1

Date(s) Drilled and Installed	Geologist J. Berk	Reviewer
Drilling Method Hollow Stem Auger	Drilling Contractor Northcoast Drilling	Total Depth of Borehole 14.00 ' bgs
Sampling Method	Drill Bit Size/Type: 3-1/4" ID HSA	Approximate Surface Elevation
Drill Rig Type: Truck-mounted CME	Groundwater Level(s)	Hammer Data 140# auto hammer
Boring Location:		

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type Number	Sampling Resistance Blows/ft	Recovery, inches	PID, OVA, ppm				
	0	0608	1					Light brown, very moist, silty SAND, (SM) trace organics	Begin drilling @
	1		3					Medium stiff, light grayish brown, moist, silty CLAY, (GP-GM) trace organics, low plasticity	
	2		6					Light grayish brown, moist, silty CLAY, (GM) low plasticity, iron oxide staining	
	3		5						
	4		3	16.0	2				
	5		4						
	6	0608	2					Medium stiff, light orangeish brown, moist, silty CLAY, (GP-GM) medium plasticity	
	7		2						
	8		5						
	9		2					Medium stiff, light brownish gray, moist, clayey SILT, (CL-ML) medium plasticity	
	10		3						
	11		4						
	12		2	22.0	1			Medium stiff, light gray, moist, silty CLAY, (CL-ML) medium plasticity	
	13		1						
	14		2					Medium stiff, light gray, moist, clayey SILT, (CL-ML) trace rock fragments, medium plasticity, (fill)	Sample submitted for laboratory analysis ()
	15		3						
	16		4						
	17		6	23.0	1			Medium stiff, light gray, moist, clayey SILT, (CL-ML) trace rock fragments, medium plasticity, (fill)	
	18		2						
	19		2						
	20		4	22.0	1				
	21		5						
	22								
	23								
	24								
	25								
	26								
	27								
	28								
	29								
	30								
								End of Boring at 14' bgs	End drilling @

*Don't fix
 @ 10'*

Project: - Detrex
 Project Location:
 Project Number: Detrex

Log of Boring IT0609

Sheet 1 of 1

Date(s) Drilled and Installed	Geologist J. Berk	Reviewer
Drilling Method Hollow Stem Auger	Drilling Contractor Northcoast Drilling	Total Depth of Borehole 14.00 ' bgs
Sampling Method	Drill Bit Size/Type: 3-1/4" ID HSA	Approximate Surface Elevation
Drill Rig Type: Truck-mounted CME	Groundwater Level(s)	Hammer Data 140# auto hammer
Boring Location:		

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Sampling Resistance Blows/6"	Recovery, inches	PID, OVA, ppm			
0				1 6 8 9	22.0	1		Soft, pale orangeish brown, moist, silty CLAY, (CL-ML) trace organics, with, low plasticity, mottled	Begin drilling @
2				4 4 8	22.0	1		Medium stiff, light grayish brown, moist, silty CLAY, (CL-ML) low plasticity, mottled	
4				3 2 2 4	18.0	1		Soft, light brown, wet, sandy SILT, (ML) non plastic	
6				2 4 3 4	18.0	1		Medium stiff, light grayish brown, very moist, silty SAND, (SC)	
8				2 2 3 5	19.0	1		Medium stiff, light gray, moist, silty CLAY, (GC) low plasticity	
10				2 2 3 4	20.0	1		Medium stiff, light gray, moist, clayey SILT, (CL-ML) trace rock fragments, medium plasticity, (till)	
12				1 1 2 3	18.0	1		Medium stiff, light gray, moist, clayey SILT, (CL-ML) little rock fragments, medium plasticity, (till)	
14								End of Boring at 14' bgs	End drilling @
16									
18									
20									
22									
24									
26									
28									
30									

Project: - Detrex
Project Location:
Project Number: Detrex

Log of Boring IT0610

Sheet 1 of 1

Date(s) Drilled and Installed	Geologist J. Berk	Reviewer
Drilling Method Hollow Stem Auger	Drilling Contractor Northcoast Drilling	Total Depth of Borehole 24.00 ' bgs
Sampling Method	Drill Bit Size/Type: 3-1/4" ID HSA	Approximate Surface Elevation
Drill Rig Type: Truck-mounted CME	Groundwater Level(s)	Hammer Data 140# auto hammer
Boring Location:		

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type Number	Sampling Resistance Blows/6"	Recovery, inches	PID, OVA, ppm				
	0		1 4 6 7	22.0	3		Medium stiff, light grayish brown, moist, silty SAND, (SM) trace organics	Begin drilling @	
	2		3 3 4 4	20.0	1		Medium stiff, light grayish brown, moist, silty CLAY, (GM) trace organics, low plasticity		
	4		2 1 3 5	17.0	1		Soft, light grayish brown, wet, silty SAND, (SM) manganese, iron oxide staining		
	6		3 5 7 8	20.0	1		Medium stiff, light grayish brown, moist, silty CLAY, (CL-ML) trace manganese, low plasticity, iron oxide staining		
	8		2 3 3 6	20.0	2		Medium stiff, light gray, moist, silty CLAY, (CL-ML) little rock fragments, low plasticity		
	10		2 3 4 5	22.0	1		Medium stiff, light gray, moist, clayey SILT, (CL-ML) trace rock fragments, medium plasticity		
	12		3 5 5 8	22.0	4		Stiff, light gray, moist, clayey SILT, (CL-ML) with rock fragments, medium plasticity, (Till)		
	14		4 4 8 7	24.0	3		Stiff, light gray, moist, clayey SILT, (CL-ML) with rock fragments, medium plasticity, (till)		
	16		4 5 6 8	24.0	2		Stiff, light gray, moist, clayey SILT, (CL-ML) with rock fragments, low plasticity, (Till)		
	18		1 5 7 10	24.0	2		Stiff, light gray, moist, silty CLAY, (CL-ML) some rock fragments, low plasticity, (Till)		
	20		6 8 10 16	20.0	2		Stiff, light gray, moist, silty CLAY, (CL-ML) little silty sand, trace rock fragments, low plasticity, (Till)		
	22		8 10 13 18	22.0	1		Very stiff, light gray, moist, clayey FAT CLAY, (CL) trace rock fragments, low plasticity, (till)		
	24						End of Boring at 24' bgs	End drilling @	
	26								
	28								
	30								

Project: - Detrex
 Project Location:
 Project Number: Detrex

Log of Boring IT0611

Sheet 1 of 1

Date(s) Drilled and Installed	Geologist J. Berk	Reviewer
Drilling Method Hollow Stem Auger	Drilling Contractor Northcoast Drilling	Total Depth of Borehole 18.00 ' bgs
Sampling Method	Drill Bit Size/Type: 3-1/4" ID HSA	Approximate Surface Elevation
Drill Rig Type: Truck-mounted CME	Groundwater Level(s)	Hammer Data 140# auto hammer
Boring Location:		

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type Number	Sampling Resistance Blows/6"	Recovery, inches	PID, OVA, ppm				
0	0	1	1	18.0	1			Soft, light grayish brown, moist, silty SAND, (ML) trace organics, low plasticity, mottled	Begin drilling @
2	2	3	4	20.0	4			Soft, light grayish brown, moist, silty SAND, (SM) trace manganese, mottled, iron oxide staining	
4	4	3	2	19.0	5			Medium stiff, light grayish brown, very moist, silty SAND, (SM) iron oxide staining	
6	6	3	3	22.0	2			Medium stiff, light grayish brown, moist, silty SAND, (SM) trace clayey silt	
8	8	2	4	23.0	3			Medium stiff, light gray, moist, silty CLAY, (CL-ML) low plasticity	
10	10	4	4	22.0	3			Medium stiff, light gray, moist, silty CLAY, (CL-ML) trace rock fragments, low plasticity	
12	12	2	4	22.0	2			Medium stiff, light gray, moist, silty CLAY, (CL-ML) medium plasticity	
14	14	3	5	18.0	5			Medium stiff, light gray, moist, silty CLAY, (CL-ML) trace rock fragments, low plasticity, (till)	
16	16	2	4	22.0	5			Stiff, light gray, moist, silty CLAY, (CL-ML) trace rock fragments, low plasticity, (till)	
18	18							End of Boring at 18' bgs	End drilling @
20	20								
22	22								
24	24								
26	26								
28	28								
30	30								

Possible till
 Thick 10'?

Project: - Detrex
 Project Location:
 Project Number: Detrex

Log of Boring IT0612

Sheet 1 of 1

Date(s) Drilled and Installed	Geologist J. Berk	Reviewer
Drilling Method Hollow Stem Auger	Drilling Contractor Northcoast Drilling	Total Depth of Borehole 18.00 ' bgs
Sampling Method	Drill Bit Size/Type: 3-1/4" ID HSA	Approximate Surface Elevation
Drill Rig Type: Truck-mounted CME	Groundwater Level(s)	Hammer Data 140# auto hammer
Boring Location:		

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Sampling Resistance Blows/6"	Recovery, inches	PID, OVA, ppm			
0	0			1	17.0	4		Medium stiff, light grayish brown, dry, silty CLAY, (GM) trace organics, non plastic, mottled, iron oxide staining, (slag)	Begin drilling @
2	2			3	19.0	5		Medium stiff, light grayish brown, moist, silty CLAY, (GM) trace silty sand, trace organics, low plasticity	
4	4			2	22.0	4		Medium stiff, light grayish brown, very moist, silty SAND, (SM) fine to medium grained	
6	6			3	19.0	12		Soft, light brown, wet, silty SAND, (SM) medium grained	
8	8			2	18.0	3		Soft, light grayish brown, very moist, silty SAND, (SM) fine to medium grained, mottled	
10	10			2	20.0	5		Medium stiff, light gray, moist, silty CLAY, (GM) trace rock fragments, low plasticity	
12	12			3	22.0	40		Medium stiff, light gray, moist, silty CLAY, (CL-ML) trace rock fragments, low plasticity, (till)	
14	14			3	12.0	45		Stiff, gray, moist, silty CLAY, (GC) trace rock fragments, low plasticity, (till)	
16	16			3	21.0	44		Stiff, gray, moist, silty CLAY, (GC) trace rock fragments, low plasticity, (till)	
18	18			7					End drilling @
20	20							End of Boring at 18' bgs	
22	22								
24	24								
26	26								
28	28								
30	30								

Project: - Detrex
 Project Location:
 Project Number: Detrex

Log of Boring IT0613

Sheet 1 of 1

Date(s) Drilled and Installed	Geologist J. Berk	Reviewer
Drilling Method Hollow Stem Auger	Drilling Contractor Northcoast Drilling	Total Depth of Borehole 18.00 ' bgs
Sampling Method	Drill Bit Size/Type: 3-1/4" ID HSA	Approximate Surface Elevation
Drill Rig Type: Truck-mounted CME	Groundwater Level(s)	Hammer Data 140# auto hammer
Boring Location:		

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Sampling Resistance Blows/6"	Recovery, inches	PID, OVA, ppm			
	0		1					Dry, silty CLAY, (GC) trace organics, non plastic, mottled	Begin drilling @
	1		4		20.0	7		Medium stiff, light grayish brown, very moist, sandy SILT, (ML) trace clayey silt, non plastic	
	2		5					Medium stiff, light grayish brown, moist, clayey SILT, (MH) trace clayey sand, non plastic, mottled	
	3		8		18.0	20			
	4		2					Soft, light grayish brown, very moist, silty SAND, (SM) trace clayey silt, fine to medium grained, iron oxide staining	
	5		3		21.0	20		Soft, light grayish brown, very moist, silty SAND, (SP-SC) fine to medium grained	
	6		5						
	7		2		21.0	12			
	8		4						
	9		5		22.0	23		Light grayish brown, moist, clayey SILT, (ML) trace clayey sand, low plasticity	
	10		1						
	11		2					Medium stiff, light grayish brown, moist, clayey SILT, (MH) trace silty sand, non plastic	
	12		4		20.0	12		Medium stiff, light gray, moist, clayey SILT, (MH) trace, low plasticity, iron oxide staining	
	13		6					Medium stiff, light gray, moist, silty CLAY, (CL-ML) trace rock fragments, low plasticity, (till)	
	14		1		24.0	30			
	15		2					Medium stiff, light gray, moist, silty CLAY, (CL-ML) trace rock fragments, low plasticity, (till)	
	16		3		23.0	12			
	17		4						
	18		2		24.0	7		Medium stiff, light gray, moist, silty CLAY, (CL-ML) with rock fragments, low plasticity, (till)	
	19		2						
	20		3						
	21		4						
	22							End of Boring at 18' bgs	End drilling @
	23							Possible FH	
	24							12'	
	25								
	26								
	27								
	28								
	29								
	30								

Project: - Detrex
 Project Location:
 Project Number: Detrex

Log of Boring IT0614

Sheet 1 of 1

Date(s) Drilled and Installed	Geologist J. Berk	Reviewer
Drilling Method Hollow Stem Auger	Drilling Contractor Northcoast Drilling	Total Depth of Borehole 22.00' bgs
Sampling Method	Drill Bit Size/Type: 3-1/4" ID HSA	Approximate Surface Elevation
Drill Rig Type: Truck-mounted CME	Groundwater Level(s)	Hammer Data 140# auto hammer
Boring Location:		

Elevation feet	Depth, feet	SAMPLES				Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type Number	Sampling Resistance Blows/ft	Recovery, inches	PID, OVA, ppm			
0	0	1	18.0	0			Loose, light orangeish brown, moist, silty SAND, (SP-SM) little wood, trace organics, trace rock fragments, medium grained	Begin drilling @
2	2	1	19.0	0			Soft, light grayish brown, very moist, sandy SILT, (ML) trace, non plastic, mottled, iron oxide staining	
4	4	1	20.0	0			Soft, light grayish brown, moist, silty SAND, (GC) trace clay, non plastic	
6	6	3	22.0	0			Medium stiff, light grayish brown, moist, clayey SILT, (ML) trace clayey sand, low plasticity	
8	8	4	20.0	0			Medium stiff, light brownish gray, moist, silty CLAY, (CL-ML) trace coarse sand, low plasticity	
10	10	4	21.0	1			Medium stiff, light gray, moist, silty CLAY, (CL-ML) trace rock fragments, medium plasticity	
12	12	3		1			Medium stiff, light gray, moist, silty CLAY, (CL-ML) trace rock fragments, low plasticity	
14	14	2	24.0	3			Stiff, light gray, moist, silty CLAY, (CL-ML) trace clayey sand, with rock fragments, low plasticity	
16	16	4	20.0	5			Medium stiff, light gray, silty CLAY, (CL-ML) with rock fragments, low plasticity, (till)	
18	18	7	24.0	3			Stiff, light gray, moist, silty CLAY, (CL-ML) with rock fragments, low plasticity, (till)	
20	20	10	20.0	3			Very stiff, light gray, moist, silty CLAY, (CL-ML) some rock fragments, non plastic, (till)	
22	22						End of Boring at 22' bgs	End drilling @
24	24							
26	26							
28	28							
30	30							

Handwritten: 10-
 Borehole till

Project: - Detrex
 Project Location:
 Project Number: Detrex

Log of Boring IT0615

Sheet 1 of 1

Date(s) Drilled and Installed	Geologist J. Berk	Reviewer
Drilling Method Hollow Stem Auger	Drilling Contractor Northcoast Drilling	Total Depth of Borehole 18.00 ' bgs
Sampling Method	Drill Bit Size/Type: 3-1/4" ID HSA	Approximate Surface Elevation
Drill Rig Type: Truck-mounted CME	Groundwater Level(s)	Hammer Data 140# auto hammer
Boring Location:		

Elevation feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	FIELD NOTES
		Type	Number	Sampling Resistance Blows/6"	Recovery, inches	PID, OVA, ppm			
	0							Soft, light brownish gray, moist, sandy SILT, trace organics, low plasticity, mottled	Begin drilling @
	2							Soft, light brownish gray, moist, sandy SILT, (ML) non plastic, iron oxide staining	
	4							Medium stiff, light grayish brown, moist, sandy SILT, (ML) trace clayey silt, non plastic, iron oxide staining	
	6							Medium stiff, light brownish gray, moist, clayey SILT, (CL-ML) low plasticity, mottled	
	8							Medium stiff, light gray, moist, silty CLAY, (CL-ML) medium plasticity	
	10							Medium stiff, light gray, moist, clayey SILT, (CL-ML) trace rock fragments, low plasticity	
	12							Medium stiff, light gray, moist, clayey SILT, (CL-ML) trace silty sand, low plasticity	
	14							Medium stiff, light gray, moist, silty CLAY, (CL-ML) some rock fragments, low plasticity, (fill)	
	16							Stiff, light gray, moist, silty CLAY, (CL-ML) some rock fragments, low plasticity, (fill)	
	18							End of Boring at 18' bgs	End drilling @
	20								
	22								
	24								
	26								
	28								
	30								

Project: Detrex Corporation
Project Location: Ashtabula, Ohio
Project Number: 5E06680

Log of Boring MP-1

Sheet 1 of 1

Date(s) Drilled	1/27/97		Logged By	R. Fabian	Checked By	N. Sauer	
Drilling Method	Hollow-Stem Auger		Drill Bit Size/Type	4-1/4-inch-ID / 8-inch-OD auger	Top of Casing Elevation	636.38 feet MSL	
Drill Rig Type	Falling F-7		Drilling Contractor	Lehti Drilling	Total Depth	22.0 feet	
Groundwater Depth and Date Measured	Not measured		Sampler Type	2 x 24-inch split spoon	Hammer Data	140 lbs, 30-inch drop	
Diameter of Hole (inches)	8	Diameter of Well (inches)	2	Type of Well Casing	Schedule 40 PVC	Screen Perforation	0.010-inch slot
Type of Sand Pack	Filter sand		Type/Depth of Seal(s)	Bentonite 6-4.5 ft, bentonite grout 4.5 ft to surface			
Comments	Drilled 10 feet east of Recovery Well RW-1; see site plan for location.						

Elevation, feet	Depth, feet	SAMPLES					MATERIAL DESCRIPTION	Piezometer Completion Log	REMARKS
		Type	Number	Recovery, inches	Blows per 6 inches (SPT N)	Headspace H _{Nu} , ppmv			
0	0						[Borehole drilled to 5 feet without sampling.]		Cloudy, 20°, with light wind at start of drilling.
630	5		1	18	--	200	Moist, brown CLAY, with some silt, sand, and fine gravel (Lacustrine).		
625	10		2	12	--	100	Becomes brown and gray, with no gravel.		Starts raining; difficult to get H _{Nu} reading.
620	15		3	20	--	--	Becomes soft, gray.		
615	20		4	--	--	--			End drilling and sampling on 1/27/97. Return to drill site 1/28/97 to install piezometer.
610	25						Bottom of boring at 22.0 feet.		

Project: Detrex Corporation
Project Location: Ashtabula, Ohio
Project Number: 5E06680

Log of Boring MP-2

Sheet 1 of 1

Date(s) Drilled	1/28/97	Logged By	R. Fabian	Checked By	N. Sauer
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	4-1/4-inch-ID / 8-inch-OD auger	Top of Casing Elevation	636.09 feet MSL
Drill Rig Type	Falling F-7	Drilling Contractor	Lahti Drilling	Total Depth	22.0 feet
Groundwater Depth and Date Measured	Not measured	Sampler Type	2 x 24-inch split spoon	Hammer Data	140 lbs, 30-inch drop
Diameter of Hole (inches)	8	Diameter of Well (inches)	2	Type of Well Casing	Schedule 40 PVC
Type of Sand Pack	Filter sand	Type/Depth of Seal(s)	Bentonite 6-4.5 ft, bentonite grout 4.5 ft to surface		
Comments	Drilled 20 feet south of Recovery Well RW-1; see site plan for location.				

Elevation, feet	Depth, feet	SAMPLES					MATERIAL DESCRIPTION	Piezometer Completion Log	REMARKS
		Type	Number	Recovery, inches	Blows per 6 inches (SPT N)	Headspace H _{Nu} , ppmv			
0	0						[Borehole drilled to 5 feet without sampling.]		Windy, 25°, with light snow during drilling.
630	5		1	18	6-9-7-13 (16)	200	Very stiff, moist, mottled brown and gray CLAY, with some sand and fine gravel [Lacustrine].		
625	10		2	20	7-9-11-13 (20)	500	Becomes brown, with some gray clay, some sand, no gravel.		
620	15		3	18	9-10-11-23 (21)	400	Becomes gray.		
615	20		4	18	8-10-12-13 (22)	--	Very stiff, moist, gray CLAY, with some silt, sand, and fine gravel, some brown mottling [Till].		
610	25						Bottom of boring at 22.0 feet.		

Woodward-Clyde Consultants

MP-2

Project: Detrex Corporation
Project Location: Ashtabula, Ohio
Project Number: 5E06680

Log of Boring MP-3

Sheet 1 of 1

Date(s) Drilled	1/28/97	Logged By	R. Fabian	Checked By	N. Sauer
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	4-1/4-inch-ID / 8-inch-OD auger	Top of Casing Elevation	636.30 feet MSL
Drill Rig Type	Falling F-7	Drilling Contractor	Lahti Drilling	Total Depth	24.0 feet
Groundwater Depth and Date Measured	Not measured	Sampler Type	2 x 24-inch split spoon, Shelby	Hammer Data	140 lbs, 30-inch drop
Diameter of Hole (inches)	8	Diameter of Well (inches)	2	Type of Well Casing	Schedule 40 PVC
Type of Sand Pack	Filter sand	Type/Depth of Seal(s)	Bentonite 6-4.5 ft, bentonite grout 4.5 ft to surface		
Comments	Drilled 10 feet west of Recovery Well RW-1; see site plan for location.				

Elevation, feet	Depth, feet	SAMPLES					MATERIAL DESCRIPTION	Piezometer Completion Log	REMARKS
		Type	Number	Recovery, inches	Blows per 6 inches (SPT N)	Headspace HNU, ppmv			
0	0						[Borehole drilled to 4 feet without sampling.]		Windy, 25°, with light snow during drilling.
-630	5		1	--	Push	--	Very stiff, wet, brown CLAY, with some sand and fine gravel [Lacustrine].		Sampled with Shelby tube from 4-6 ft.
			2	24	9-11-16-17 (27)	500			
-625	10		3	8	10-8-11-15 (19)	200	↓ Becomes brown, with some fine gravel, no sand. ↓ Becomes gray, with some sand and fine gravel.		
-620	15		4	24	9-13-17-14 (30)	300	↓ Becomes brown. Very stiff, moist, gray CLAY, with some sand [Till].		
-615	20		5	24	8-10-12-15 (22)	400	↓ Becomes wet, brown, with some fine gravel, some moist, gray sand.		
-610									Boring sampled to 22 ft, then augered to 24 ft for piezometer installation.
	25						Bottom of boring at 24.0 feet.		

Project: Detrex Corporation
Project Location: Ashtabula, Ohio
Project Number: 5E06680

Log of Boring MP-4

Sheet 1 of 1

Date(s) Drilled	1/28/97 - 1/29/97		Logged By	R. Fabian	Checked By	N. Sauer	
Drilling Method	Hollow-Stem Auger		Drill Bit Size/Type	4-1/4-inch-ID / 8-inch-OD auger	Top of Casing Elevation	636.18 feet MSL	
Drill Rig Type	Falling F-7		Drilling Contractor	Lahti Drilling	Total Depth	24.0 feet	
Groundwater Depth and Date Measured	Not measured		Sampler Type	2 x 24-inch split spoon, Shelby	Hammer Data	140 lbs, 30-inch drop	
Diameter of Hole (inches)	8	Diameter of Well (inches)	2	Type of Well Casing	Schedule 40 PVC	Screen Perforation	0.010-inch slot
Type of Sand Pack	Filter sand		Type/Depth of Seal(s)	Bentonite 6-4.5 ft, bentonite grout 4.5 ft to surface			
Comments	Drilled 40 feet north of Recovery Well RW-1; see site plan for location.						

Elevation, feet	Depth, feet	SAMPLES				MATERIAL DESCRIPTION	Piezometer Completion Log	REMARKS
		Type	Number	Recovery, inches	Blows per 6 inches (SPT N)	Headspace H ₂ O, ppmv		
0								Windy, 25°, with light snow at start of drilling.
			1	18	27-17-13-9 (30)	4		H ₂ O reading in borehole 200 ppm; 0 ppm in breathing zone.
630			2	--	Push	--		Sampled with Shelby tube from 4-6 ft.
	5		3	18	5-7-10-15 (17)	400		
			4	24	8-9-13-23 (22)	500		End drilling for 1/28/97. Resume drilling on 1/29/97; weather conditions clear, 7°.
625			5	18	5-10-12-12 (22)	500		
	10		6	18	4-7-8-9 (15)	400		
			7	12	4-6-7-10 (13)	100		
620			8	22	3-5-9-8 (14)	4		
	15		9	15	4-8-10-13 (18)	2		
615			10	15	7-9-10-12 (19)	6		
	20							Boring sampled to 22 ft, then augered to 24 ft for piezometer installation.
610								
	25							Bottom of boring at 24.0 feet.

2/14/97 1WL1J3 DTRX

Woodward-Clyde Consultants

MP-4

AWARE
INCORPORATED

TEST BORING LOG

NO. RMI-2S

 PROJECT: RCRA FACILITY INVESTIGATION
 CLIENT: RMI SODIUM PLANT

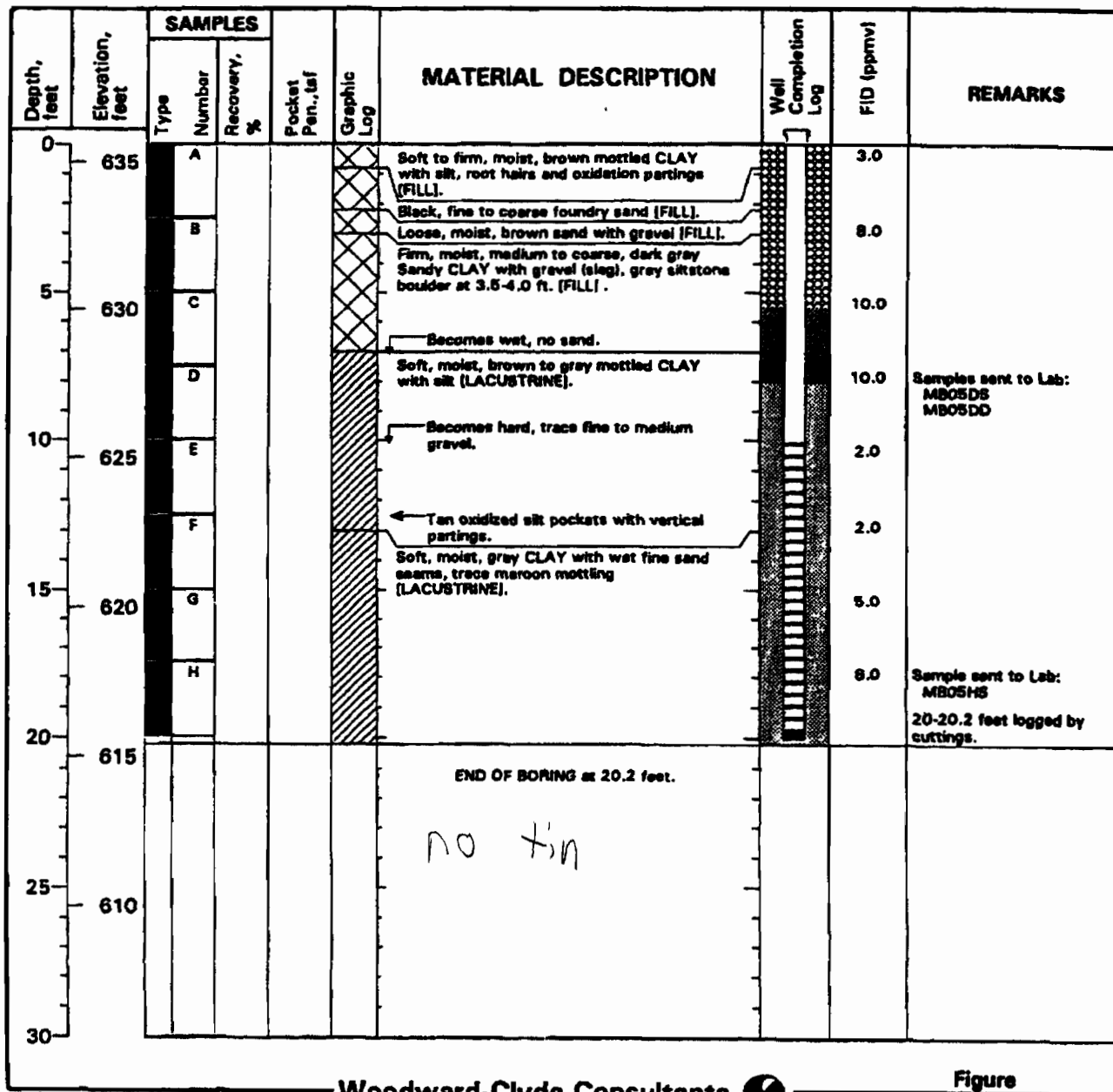
 SHEET NO. 1 of 1
 PROJECT NO. 6120

DRILLING DATA			SAMPLING METHODS			
CONTRACTOR: PENNSYLVANIA DRILLING CO.			SAMPLER	TUBE	CORE	
DRILLER: BURNIE GOLLIHUE			TYPE	5' cont. SPLIT TUBE		
EQUIPMENT: ROTARY 8"OD AUGER			DIAMETER	4"		
METHOD:			OTHER			
WELL CONSTRUCTION			WELL DEVELOPMENT		GROUND	WELL
	RISER	INTAKE	METHOD:		ELEV 636.3	638.64
MATERIAL	Teflon	Teflon	DURATION:		DATE STARTED: 10-19-88	
DIAMETER	2"	2"	YIELD:		DATE COMPLETED: 10-19-88	
COUPLING	THREADED	THREADED	OTHER:		INSPECTOR: ROB GUIDRY	

WELL CONSTRUCTION	DEPTH (FEET)	SAMPLE			CLASSIFICATION (AFTER BURMISTER, 1959)	REMARKS	HNU
		NO.	TYPE	BLOWS PER 6 INCHES			
	0				GRAY SILTY CLAY, trace (+) Sand	CLAY CAP	6ppm
	3.5'	1					
	5	—			MOTTLED BROWN AND GRAY SILTY CLAY	WEATHERED TILL	11ppm
	10	2			grades to		
	12.9'	3			GRAY CLAY + SILT, trace fine Gravel LARGE OXIDIZED FRACTURE PLANES THROUGHOUT THIN fine Sand lense @ 12.8-12.9'	UNWEATHERED TILL	150ppm
	15	—			GRAY SILTY CLAY OXIDIZED FRACTURES present		
	21.6'	4			Gray Clayey SILT, trace (+) fine Sand, trace (-) fine Gravel SILT and fine Sand laminations increase from 20' to 21.6'		
	23.7'	5			SMALL PINK CLAY INCLUSIONS 18-21'		
	25				GRAY SILTY CLAY with fine Sand-filled fractures		130ppm
	25				GRAY SILTY CLAY		
	25				END OF BORING		
	30						
	35						
	40						

Project: Fields Brook Superfund Site - Ashtabula, Ohio	Log of Boring RMSMW05S
Project Number: 86C3609K	Sheet 1 of 1
Boring Location: RMI Titanium Company (Sodium Plant)	

Date(s) Drilled 2/3/93	Logged By E. Page	Checked By J.A. Ozimek
Drilling Method Hollow stem auger	Auger Bit Size/Type (in. I.D.) 4.25	Approx. Surface Elevation (feet, MSL) 635.6
Drill Rig Type Felling F-7	Drilled By Lahti Drilling	Total Depth Drilled (feet) 20.2
Groundwater Elevation (feet, MSL)	Number of Samples Collected: 8 Analyzed: 3	Sampler Type Continuous sample
Diameter of Hole (inches) 8.25 Diameter of Well (inches) 2	Type of Well Casing PVC	Screen Perforation 0.010 in.
Type of Sand Pack 20 mesh	Type/Thickness of Seal(s) 2.5 ft. Bentonite pellets	
Comments		Top of Well Casing Elevation (feet, MSL) 638.22



TEST PIT STRATIGRAPHIC LOG

(WL-01)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT01-01
DATE COMPLETED: JANUARY 9, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	609.5						
	TOPSOIL	609.3						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist to very moist - black stain, faint odor @ 2.3ft BGS	606.8			2.0 2.3 3.0	0 0 0		
-5.0	CL-SILTY CLAY, soft, low plasticity, light gray, very moist - firm @ 5.0ft BGS				5.0	0		
-7.5	BOTTOM OF TEST PIT @ 7.0ft BGS	602.5			7.0	0		
-10.0	NOTE: 1. Elevation of NE end of TT01-01 is 610.1ft AMSL, and the SW end is 609.5ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

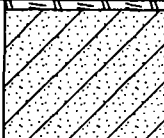
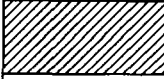
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-02)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT02-01
DATE COMPLETED: JANUARY 9, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	610.1						
	TOPSOIL	609.8						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist to very moist - gray, wet, dilatant @ 3.0ft BGS				3.0	0		
-5.0	CL-SILTY CLAY, trace sand, firm, low plasticity, gray, moist	606.4			4.5	0		
	BOTTOM OF TEST PIT @ 5.5ft BGS	604.6			5.5	0		
-7.5	NOTE: 1. Elevation of SW end of TT02-01 is 610.6ft AMSL, and the NE end is 610.1ft AMSL.							
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

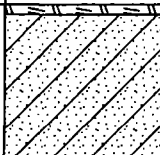
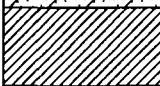

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-03)
Page 1 of 1

PROJECT NAME: FIELDS BROOKS SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT03-01
DATE COMPLETED: JANUARY 9, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	611.3						
-2.5	TOPSOIL (dark brown, silt, trace sand) MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist	611.0		007	2.0	0		
-5.0	CL-CLAY, some silt, stiff, low plasticity, gray, moist	607.3			4.0	0		
	BOTTOM OF TEST PIT @ 6.0ft BGS	605.3			5.5	0		•
-7.5	NOTE: 1. Elevation of SE end of TT03-01 is 612.3ft AMSL, and the NW end is 611.3ft AMSL.							
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

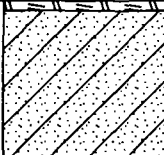
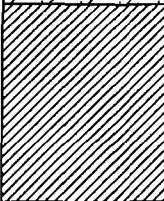
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-04)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT04-01
DATE COMPLETED: JANUARY 9, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	612.8						
-2.5	TOPSOIL (dark brown, silt, trace sand) MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist	612.5			2.0	0		
-5.0	CL-CLAY, some silt, stiff, low plasticity, gray, moist - strong odor @ 6.0ft BGS	608.8			4.0	2.0		
-7.5					7.0	180+		
-10.0	BOTTOM OF TEST PIT @ 9.0ft BGS NOTE: 1. Elevation of SW end of TT04-01 is 612.8ft AMSL, and the NE end is 614.9ft AMSL.	603.8			9.0	2000+		
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

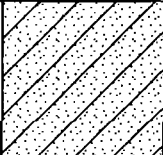
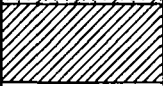
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-05)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT05-01
DATE COMPLETED: JANUARY 10, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	620.2						
-2.5	MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist to very moist	616.2			2.0	0		
-5.0	CL-CLAY, some silt, stiff, low plasticity, gray, moist				4.0	0		
	BOTTOM OF TEST PIT @ 6.0ft BGS	614.2			6.0	0		
-7.5	NOTE: 1. Elevation of W end of TT05-01 is 620.2ft AMSL, and the E end is 620.2ft AMSL.							
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

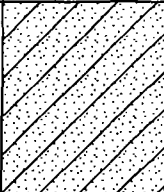

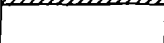
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-06)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT06-01
DATE COMPLETED: JANUARY 10, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	620.2						
-2.5	MH-SILT, trace to with sand, compact, fine grained, poorly graded, brown, moist to very moist				2.0	0		
-5.0	- silt, some sand, gray, very moist to wet, odor @ 4.3ft BGS	615.2			4.5	7.0		
	CL-CLAY, some silt, stiff, low plasticity, gray, moist, strong odor	614.2						
-7.5	BOTTOM OF TEST PIT @ 6.0ft BGS							
-10.0	NOTES: 1. DNAPL in pockets and cracks, dark brown. 2. Sheen in water. 3. The elevation of the S end of TT06-01 is 620.8ft AMSL, and the N end is 620.2ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								


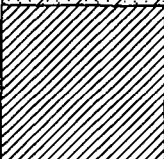

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-07)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT07-01
DATE COMPLETED: JANUARY 10, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	619.1						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, light brown, moist	615.1			2.0	0		
-5.0	CL-CLAY, some silt, stiff, low plasticity, gray, moist				5.0	9.8		
-7.5		611.1						
-10.0	BOTTOM OF TEST PIT @ 8.0ft BGS NOTE: 1. Elevation of S end of TT07-01 is 619.7ft AMSL, and the N end is 619.1ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								



NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND √

TEST PIT STRATIGRAPHIC LOG

(WL-08)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT08-01
DATE COMPLETED: JANUARY 10, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	618.0						
-2.5	MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist	614.5			2.0	0		
-5.0	CL-CLAY, some silt, stiff, low plasticity, gray, moist				5.0	15.0+		
-7.5	BOTTOM OF TEST PIT @ 6.0ft BGS	612.0						
-10.0	NOTE: 1. Elevation of S end of TT08-01 is 620.3ft AMSL, and the N end is 618.0ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

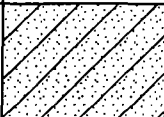
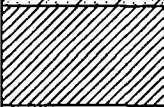
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-09)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT09-01
DATE COMPLETED: JANUARY 10, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	616.4						
-2.5	MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist	613.4			2.0	0		
-5.0	CL-CLAY, with to some silt, stiff, low plasticity, gray, moist				4.0	0		
-5.0		610.9			5.0	0		
-7.5	BOTTOM OF TEST PIT @ 5.5ft BGS NOTE: 1. Elevation of S end of TT09-01 is 617.8ft AMSL, and the N end is 616.4ft AMSL.							
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								


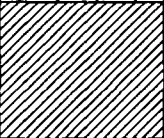

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼

TEST PIT STRATIGRAPHIC LOG

(WL-10)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT10-01
DATE COMPLETED: JANUARY 10, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	616.5						
-2.5	MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist	614.0			2.0	0		
-5.0	CL-CLAY, some silt, stiff, low plasticity, gray, moist				4.0	0		
-6.0	BOTTOM OF TEST PIT @ 6.0ft BGS				6.0	0		
-7.5	NOTE: 1. Elevation of S end of TT10-01 is 620.5ft AMSL, and the N end is 616.5ft AMSL.							
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								



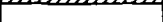
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-11)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT11-01
DATE COMPLETED: JANUARY 10, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	616.6						
-2.5	MH-SILT (FILL), trace sand, some chunks of gray clay, compact, fine grained, poorly graded, brown, moist	612.1			2.0	0		
-5.0	CL-CLAY, with silt, very stiff, low plasticity, gray, moist				4.0	0		
-7.5	BOTTOM OF TEST PIT @ 6.5ft BGS				6.0	0		
-10.0	NOTE: 1. Elevation of S end of TT11-01 is 622.6ft AMSL, and the N end is 616.6ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								


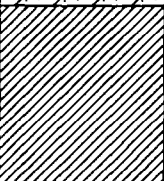
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-12)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT12-01
DATE COMPLETED: JANUARY 10, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	616.6						
-2.5	MH-SILT (FILL), trace sand, some clay chunks, compact, fine grained, poorly graded, gray and brown, moist	612.1			2.0	0		
-5.0					4.0	300+		
-7.5					6.0	300+		
-10.0	CL-CLAY, some silt, trace sand, firm to stiff, low plasticity, gray, moist, clay is stratified/fissured with sand and silt	607.6			8.0	300+		
-12.5								
-15.0								
-17.5	BOTTOM OF TEST PIT @ 9.0ft BGS NOTE: 1. Elevation of S end of TT12-01 is 622.5ft AMSL, and the N end is 616.6ft AMSL.							
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

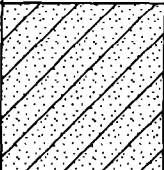

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-13)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT13-01
DATE COMPLETED: JANUARY 11, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	617.2						
-2.5	MH-SILT, trace to with sand, compact, fine grained, poorly graded, brown, moist				2.0	0		
-5.0	- wet, sheen on water @ 4.2ft BGS CL-CLAY, some silt, clay stratified with silt and sand, firm, gray, wet	612.7			4.0	50+		
-7.5	BOTTOM OF TEST PIT @ 6.5ft BGS	610.7			6.0	150+		
-10.0	NOTES: 1. DNAPL on clay, dark brown. 2. Elevation of S end of TT13-01 is 618.8ft AMSL, and the N end is 617.2ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

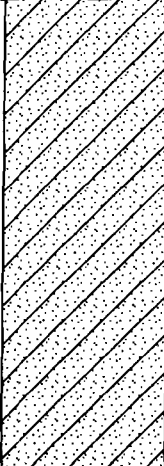

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-14)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP14-01
DATE COMPLETED: JANUARY 11, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	622.5						
-2.5	MH-SAND, with silt, compact, fine grained, poorly graded, brown, moist							
-5.0								
-7.5					8.0	0		
-10.0					10.0	0		
-12.5	CL-CLAY, some silt, stiff, low plasticity, gray, moist	610.5			12.0	0		
	BOTTOM OF TEST PIT @ 13.0ft BGS	609.5						
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

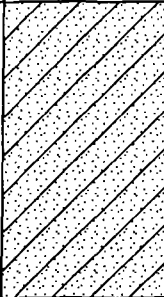
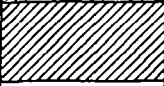
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼

TEST PIT STRATIGRAPHIC LOG

(WL-15)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT15-01
DATE COMPLETED: JANUARY 11, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	618.3						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist				2.0	0		
-5.0					4.0	0		
-7.5					6.0	0		
-7.5	CL-CLAY, some silt, stiff, low plasticity, gray, moist, strong odor	610.8			8.0	500+		
-10.0	BOTTOM OF TEST PIT @ 9.5ft BGS	608.8						
-12.5	NOTE: 1. Elevation of SE end of TT15-01 is 619.6ft AMSL, and the NW end is 618.3ft AMSL.							
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

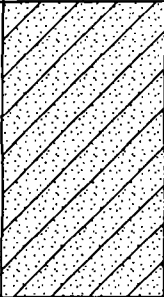
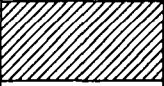
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-16)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT16-01
DATE COMPLETED: JANUARY 11, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	618.8						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist to very moist			013	3.0	0		
-5.0					6.0	0		
-7.5		611.3			7.5	18.5		
	CL-CLAY, some silt, stiff, low plasticity, gray, moist							
-10.0	BOTTOM OF TEST PIT @ 9.5ft BGS	609.3			9.5	15+		•
	NOTE: 1. Elevation of SE end of TT16-01 is 619.5ft AMSL, and the NW end is 618.8ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

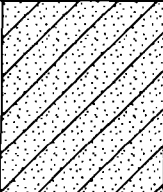

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-17)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT17-01
DATE COMPLETED: JANUARY 11, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	621.8						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist, no odor/stain				2.0	0		
-5.0		616.8			4.0	0		
	CL-CLAY, with silt, stiff, low plasticity, gray, moist				6.0	0		
-7.5	BOTTOM OF TEST PIT @ 7.0ft BGS	614.8						
-10.0	NOTE: 1. Elevation of S end of TT17-01 is 622.0ft AMSL, and the N end is 621.8ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

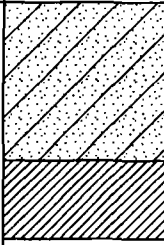
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-18)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT18-01
DATE COMPLETED: JANUARY 11, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	620.9						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist to very moist	616.9 614.9			2.0	0		
-5.0	CL-CLAY, with silt, stiff, low plasticity, gray, moist				4.0 5.0	50-100 100+		
-7.5	BOTTOM OF TEST PIT @ 6.0ft BGS							
-10.0	NOTES: 1. DNAPL on clay, dark brown. 2. Elevation of S end of TT18-01 is 621.5ft AMSL, and the N end is 620.9ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

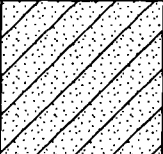

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒

TEST PIT STRATIGRAPHIC LOG

(WL-19)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT19-01
DATE COMPLETED: JANUARY 11, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	620.9						
2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist to very moist				2.0	0		
5.0	- sheen on water @ 4.0ft BGS CL-CLAY, with silt, sand and silt fissures in clay, firm to stiff, low plasticity, gray, moist, sheen on water	618.9 615.4			4.5 5.0	50-100 50-100		
7.5	BOTTOM OF TEST PIT @ 5.5ft BGS							
10.0	NOTES: 1. DNAPL pockets on clay. 2. Elevation of S end of TT19-01 is 621.3ft AMSL, and the N end is 620.9ft AMSL.							
12.5								
15.0								
17.5								
20.0								
22.5								
25.0								
27.5								
30.0								
32.5								

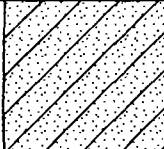

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼

TEST PIT STRATIGRAPHIC LOG

(WL-20)
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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT20-01
DATE COMPLETED: JANUARY 11, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	618.5						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist	614.5			2.0	0		
-5.0	CL-CLAY, some silt, firm, low plasticity, gray, moist, clay has fractures/fissures of sand				4.0	25-50		
-7.5	BOTTOM OF TEST PIT @ 6.5ft BGS	612.0			6.5	25-50		
-10.0	NOTE: 1. Elevation of SW end of TT20-01 is 618.5ft AMSL, and the NE end is 620.7ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

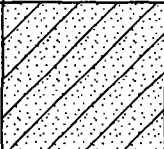

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-21)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT21-01
DATE COMPLETED: JANUARY 11, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	619.4						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist				2.0	0		
-5.0	- wet @ 3.9ft BGS CL-CLAY, with silt, stiff, low plasticity, gray, moist	615.4			4.0 4.0	40 5.0		
-7.5	BOTTOM OF TEST PIT @ 6.5ft BGS	612.9						
-10.0	NOTES: 1. Slight sheen on water along creek. 2. Elevation of S end of TT21-01 is 619.4ft AMSL, and the N end is 619.8ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

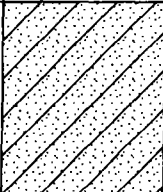

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND √

TEST PIT STRATIGRAPHIC LOG

(WL-22)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT22-01
DATE COMPLETED: JANUARY 11, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	619.2						
-2.5	MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist				3.0	0		
-5.0	- very moist @ 4.8ft BGS CL-CLAY, with silt, stiff, low plasticity, gray, moist	614.2			4.5	25-40		
-7.5	BOTTOM OF TEST PIT @ 7.0ft BGS NOTES: 1. DNAPL present on clay. 2. Sheen present in wet sand pockets. 3. Elevation of S end of TT22-01 is 619.2ft AMSL, and the N end is 619.9ft AMSL.	612.2			7.0	18.4		
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								


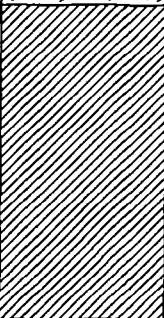
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND √

TEST PIT STRATIGRAPHIC LOG

(WL-23)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT23-01
DATE COMPLETED: JANUARY 16, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	617.7						
-2.5	OL-ORGANIC SILT, trace sand, loose, fine grained, poorly graded, gray, white, very moist	610.7			3.0	12.8		
-5.0					6.0	16.2		
-7.5					8.0	75+		
-10.0	CL-CLAY, with silt, firm, low plasticity, gray, moist	602.7						
-12.5								
-15.0					15.0	10-15		
-17.5	BOTTOM OF TEST PIT @ 15.0ft BGS NOTES: 1. DNAPL present on clay. 2. Elevation of S end of TT23-01 is 617.7ft AMSL, and the N end is 623.0ft AMSL.							
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								



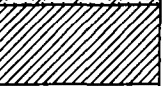
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-24)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT24-01
DATE COMPLETED: JANUARY 16, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	615.9						
-2.5	OL-ORGANIC SILT, trace sand, loose, fine grained, poorly graded, gray and white, very moist	613.4		001	6.0	50+		•
	MH-SILT, with sand, compact, fine grained, poorly graded, brown, very moist	611.4						
-5.0	CL-CLAY, with silt, stiff, low plasticity, gray, moist	609.4						
-7.5	BOTTOM OF TEST PIT @ 6.5ft BGS							
-10.0	NOTES: 1. DNAPL present on clay. 1. Elevation of SE end of TT24-01 is 615.9ft AMSL, and the NW end is 617.2ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								


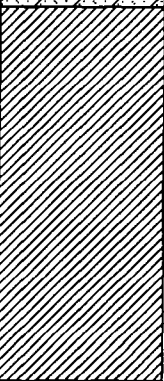
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▽

TEST PIT STRATIGRAPHIC LOG

(WL-25)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT25-01
DATE COMPLETED: JANUARY 16, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	615.0						
-2.5	MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist				3.0	0		
-5.0	- very moist @ 4.9ft BGS CL-CLAY, with silt, very stiff, low plasticity, gray, moist	610.0		002	5.5	150		•
-7.5								
-10.0				003	10.0	150-200+		•
-12.5								
-15.0	BOTTOM OF TEST PIT @ 14.5ft BGS	600.5						
-17.5	NOTE: 1. Elevation of SE end of TT25-01 is 615.0ft AMSL, and the NW end is 616.1ft AMSL.							
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

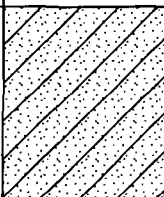
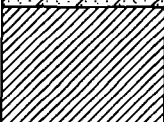
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-26)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP26-01
DATE COMPLETED: JANUARY 16, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	615.9						
2.5	MH-SAND, with silt, compact, fine grained, poorly graded, brown, moist				4.0	0		
5.0	CL-CLAY, some silt, trace sand, stiff, low plasticity, gray, moist	610.9			7.0	4.5		
7.5								
10.0	BOTTOM OF TEST PIT @ 8.0ft BGS	607.9						
12.5								
15.0								
17.5								
20.0								
22.5								
25.0								
27.5								
30.0								
32.5								

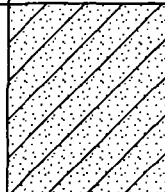
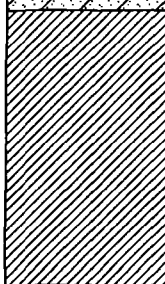
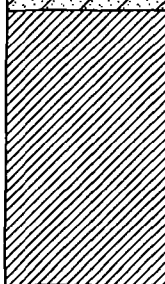
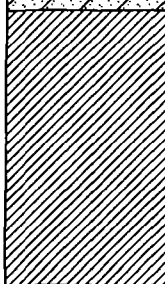
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-27)
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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP27-01
DATE COMPLETED: JANUARY 16, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	616.5						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist	611.5		004	3.5	0		
-5.0	CL-CLAY, some silt, vertical sand fissures, firm to stiff, low plasticity, gray, moist, clay is stained red, brown and black				6.0	3.2		
-7.5					8.5	150+		
-10.0								
-12.5	BOTTOM OF TEST PIT @ 12.0ft BGS	604.5				12.0	200+	
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

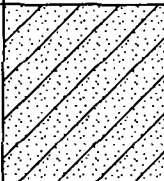
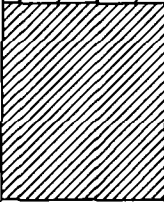
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-28)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP28-01
DATE COMPLETED: JANUARY 16, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	616.0						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist	611.5			4.0	0		
-5.0	CL-CLAY, some silt, trace sand, sand fissures, firm, medium plasticity, gray, moist				6.0	150+		
-7.5					8.0	150+		
-10.0	BOTTOM OF TEST PIT @ 9.5ft BGS	606.5						
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

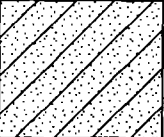
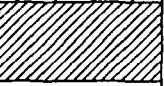
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND √

TEST PIT STRATIGRAPHIC LOG

(WL-29)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP29-01
DATE COMPLETED: JANUARY 16, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	616.1						
2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist, no odor or staining				2.0	0		
5.0	CL-CLAY, some silt, trace sand, firm, low plasticity, gray, moist	612.6			4.0	0		
	BOTTOM OF TEST PIT @ 5.5ft BGS	610.6			5.5	0		
7.5								
10.0								
12.5								
15.0								
17.5								
20.0								
22.5								
25.0								
27.5								
30.0								
32.5								

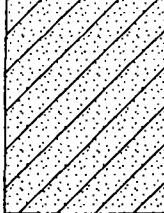
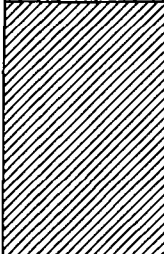
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-30)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT30-01
DATE COMPLETED: JANUARY 16, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	615.9						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist				3.5	0		
-5.0	- very moist @ 5.3ft BGS	610.4		005	5.5	14.0		•
-7.5	CL-CLAY, some silt, trace silt and sand fissures, stiff, low plasticity, gray, moist							
-10.0				006	11.0	150+		•
-12.5	BOTTOM OF TEST PIT @ 12.0ft BGS	603.9						
-15.0	NOTE: 1. Elevation of S end of TT30-01 is 615.9ft AMSL, and the N end is 616.1ft AMSL.							
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

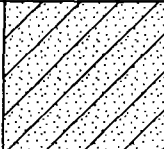
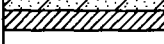
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-31)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP31-01
DATE COMPLETED: JANUARY 16, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	613.8						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist				2.5	0		
-5.0	DNAPL @ 4.0ft BGS CL-CLAY, some silt, stiff, low plasticity, gray, moist BOTTOM OF TEST PIT @ 4.5ft BGS	609.8 609.3						
-7.5								
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

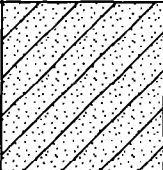

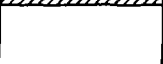
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND √

TEST PIT STRATIGRAPHIC LOG

(WL-32)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP32-01
DATE COMPLETED: JANUARY 17, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	612.7						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist							
-5.0	- very moist to wet, sheen present @ 4.3ft BGS	608.2			3.5	0		
	CL-CLAY, some silt, stif, low plasticity, gray, moist	606.7			5.5	105		
-7.5	BOTTOM OF TEST PIT @ 6.0ft BGS							
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

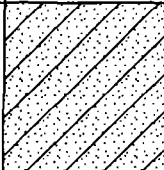
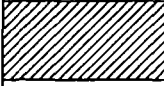
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND √

TEST PIT STRATIGRAPHIC LOG

(WL-33)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP33-01
DATE COMPLETED: JANUARY 17, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	612.6						
-2.5	MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist, occasional wet sand pocket	608.1			2.5	0		
-5.0	CL-CLAY, some silt, stiff, low plasticity, gray, moist				4.0	0		
-6.5					6.0	0		
-7.5	BOTTOM OF TEST PIT @ 6.5ft BGS							
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

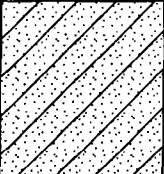

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-34)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP34-01
DATE COMPLETED: JANUARY 17, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	612.9						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist				3.5	0		
-5.0	CL-CLAY, some silt, trace sand, stiff, low plasticity, gray, moist	608.4						
	BOTTOM OF TEST PIT @ 6.0ft BGS	606.9			6.0	180+		
-7.5								
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								


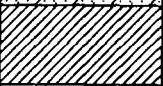
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-35)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP35-01
DATE COMPLETED: JANUARY 17, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	613.1						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist	609.1		008	2.5	0		
-5.0	CL-CLAY, some silt, stiff, low plasticity, gray, moist	607.1			4.5 5.0	250+ 50		•
-7.5	BOTTOM OF TEST PIT @ 6.0ft BGS	607.1						
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								


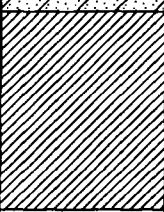
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-36)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP36-01
DATE COMPLETED: JANUARY 17, 2001
TEST PIT METHOD: TRACK-MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	0.0						
-2.5	MH-SILT, trace to with sand, compact, fine grained, poorly graded, brown, wet, dilatant	-3.0			2.5	0		
-5.0	CL-SILTY CLAY, firm to stiff, low plasticity, gray, moist - clay, some silt @ 5.0ft BGS				4.5 5.5	14.5 50+		
-7.5								
-10.0	BOTTOM OF TEST PIT @ 8.0ft BGS NOTE: 1. Sand and Silt lenses/fissures throughout clay strata.	-8.0						
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

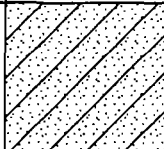

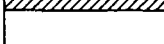
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-37)
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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP37-01
DATE COMPLETED: JANUARY 17, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	613.7						
2.5	MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist				3.0	0		
	- very moist to wet @ 3.8ft BGS	609.7						
5.0	DNAPL, dark brown @ 4.0ft BGS	608.7						
	CL-CLAY, some silt, stiff, low plasticity, gray, moist							
	BOTTOM OF TEST PIT @ 5.0ft BGS							
7.5								
10.0								
12.5								
15.0								
17.5								
20.0								
22.5								
25.0								
27.5								
30.0								
32.5								

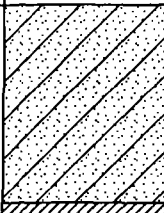
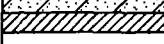
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼

TEST PIT STRATIGRAPHIC LOG

(WL-38)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP38-01
DATE COMPLETED: JANUARY 17, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	612.7						
2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist				4.0	0		
5.0	- very moist to wet @ 4.8ft BGS DNAPL @ 5.0ft BGS	607.7 607.7 607.2						
7.5	CL-CLAY, some silt, stiff, low plasticity, gray, moist BOTTOM OF TEST PIT @ 5.5ft BGS							
10.0								
12.5								
15.0								
17.5								
20.0								
22.5								
25.0								
27.5								
30.0								
32.5								

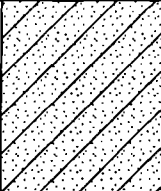

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-39)
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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP39-01
DATE COMPLETED: JANUARY 17, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	614.8						
-2.5	MH-SILT, trace sand, loose, fine grained, poorly graded, brown, moist to very moist - compact, moist @ 1.5ft BGS	609.8			3.5	0		
-5.0	CL-CLAY, some silt, trace sand, stiff, low plasticity, gray, moist				6.0	0		
-7.5	BOTTOM OF TEST PIT @ 7.0ft BGS	607.8						
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								


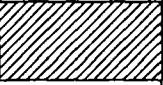
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND √

TEST PIT STRATIGRAPHIC LOG

(WL-40)
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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP40-01
DATE COMPLETED: JANUARY 17, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	614.6						
-2.5	MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist				3.5	0		
-5.0	- with sand @ 4.5ft BGS	609.6			5.5	0		
-7.5	CL-CLAY, some silt, stiff, low plasticity, gray, moist	607.6			7.0	0		
-7.5	BOTTOM OF TEST PIT @ 7.0ft BGS							
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

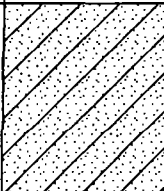


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼

TEST PIT STRATIGRAPHIC LOG

(WL-41)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT41-01
DATE COMPLETED: JANUARY 17, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	614.5						
-2.5	MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist				3.5	0		
-5.0	- very moist to wet, sand pockets @ 5.5ft BGS DNAPL @ 6.0ft BGS	608.5			5.5	0		
-7.5	CL-CLAY, some silt, stiff, low plasticity, gray, moist BOTTOM OF TEST PIT @ 7.0ft BGS	607.5						
-10.0	NOTE: 1. Elevation of S end of TT41-01 is 614.9ft AMSL, and the N end is 614.5ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

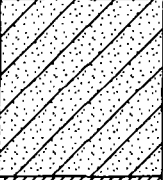
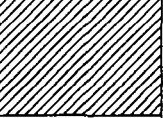
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-42)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT42-01
DATE COMPLETED: JANUARY 17, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	615.3						
-2.5	MH-SILT, with sand, compact, fine grained, poorly graded, brown, moist - wet	610.8		009 010	3.5	0		
-5.0	CL-CLAY, some silt, firm, low plasticity, gray, moist, clay stratified with fine sand lenses				5.5	4-150		
-7.5	DNAPL pockets @ 7.0ft BGS BOTTOM OF TEST PIT @ 7.5ft BGS	607.8			7.5 7.5	15.0 15.0		• •
-10.0	NOTE: 1. Elevation of SE end of TT42-01 is 616.0ft AMSL, and the NW end is 615.3ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

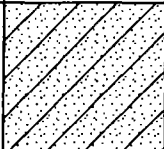

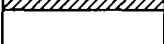
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-43)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT43-01
DATE COMPLETED: JANUARY 17, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	616.1						
2.5	MH-SILT, trace sand, occasional sand pockets, compact, fine grained, poorly graded, brown, moist				3.0	0		
	DNAPL, patchy @ 4.0ft BGS	612.1						
5.0	CL-CLAY, some silt, stiff, low plasticity, gray, moist	611.1						
	BOTTOM OF TEST PIT @ 5.0ft BGS							
7.5	NOTE: 1. Elevation of SE end of TT43-01 is 616.5ft AMSL, and the NW end is 616.1ft AMSL.							
10.0								
12.5								
15.0								
17.5								
20.0								
22.5								
25.0								
27.5								
30.0								
32.5								




NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-44)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP44-01
DATE COMPLETED: JANUARY 17, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	616.1						
-2.5	MH-SILT, trace to with sand, compact, fine grained, poorly graded, brown, moist				3.5	0		
-5.0	- very moist to wet @ 4.5ft BGS DNAPL @ 5.0ft BGS	611.1						
-7.5	CL-CLAY, some silt, stiff, low plasticity, gray, moist BOTTOM OF TEST PIT @ 6.0ft BGS	610.1						
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

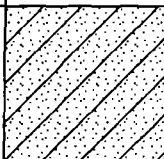
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-45)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT45-01
DATE COMPLETED: JANUARY 18, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	617.7						
-2.5	MH-SILT, trace sand, compact, fine grained, poorly graded brown, moist	613.7			3.0	0		
-5.0	CL-CLAY, some silt, trace vertical sand lenses, stiff, low plasticity, gray, moist			011	8.0	0		•
-7.5					8.0	100+		
-10.0	BOTTOM OF TEST PIT @ 10.0ft BGS	607.7		012	10.0	200+		•
-12.5	NOTES: 1. Photograph taken of vertical sand lenses. 2. Elevation of S end of TT45-01 is 617.7ft AMSL, and the N end is 619.1ft AMSL.							
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

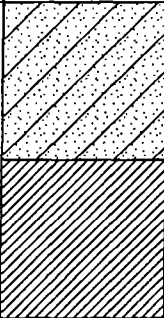
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-46)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT46-01
DATE COMPLETED: JANUARY 18, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	617.6						
2.5	MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist	613.6			2.5	0		
5.0	CL-CLAY, some silt, stiff, low plasticity, gray, moist				4.5	0		
7.5					6.5	0		
	BOTTOM OF TEST PIT @ 8.0ft BGS	609.6			8.0	0		
10.0	NOTE: 1. Elevation of S end of TT46-01 is 617.9ft AMSL, and the N end is 617.6ft AMSL.							
12.5								
15.0								
17.5								
20.0								
22.5								
25.0								
27.5								
30.0								
32.5								

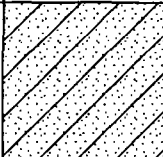
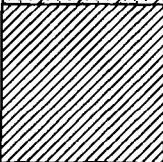
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-47)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP47-01
DATE COMPLETED: JANUARY 18, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	617.5						
2.5	MH-SILT, trace to with sand, compact, fine grained, poorly graded, brown, moist	613.5			3.0	0		
5.0	CL-CLAY, some silt, stiff, low plasticity, gray, moist				6.0	0		
7.5		609.5			8.0	0		
10.0	BOTTOM OF TEST PIT @ 8.0ft BGS							
12.5								
15.0								
17.5								
20.0								
22.5								
25.0								
27.5								
30.0								
32.5								

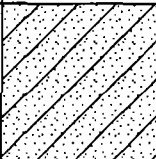
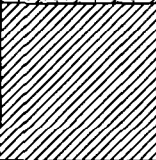
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-48)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TP48-01
DATE COMPLETED: JANUARY 18, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	618.0						
-2.5	MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist	614.0			2.0	0		
-5.0	CL-CLAY, some silt, trace sand, fissures, stiff, low plasticity, gray, moist - slight sheen @ 6.0ft BGS				4.5	7.0		
-7.5		610.0			6.5	50+		
					7.5	80+		
	BOTTOM OF TEST PIT @ 8.0ft BGS							
-10.0								
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

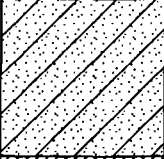

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

TEST PIT STRATIGRAPHIC LOG

(WL-49)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676-10
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

TEST PIT DESIGNATION: TT49-01
DATE COMPLETED: JANUARY 18, 2001
TEST PIT METHOD: TRACK MOUNTED EXCAVATOR
CRA SUPERVISOR: D. DEITNER

DEPTH ft. BGS	SAMPLE DESCRIPTION	ELEV. ft. AMSL	GRAPHIC LOG	SAMPLE			ANALYSIS	
				NUMBER	SAMPLE INTERVAL	PID (ppm)	GRAIN SIZE	CHEMICAL
	GROUND SURFACE	616.9						
-2.5	MH-SILT, trace sand, compact, fine grained, poorly graded, brown, moist	612.9 610.9			3.0	0		
-5.0	CL-CLAY, some silt, stratified with sand and silt lenses, firm, low plasticity, gray, moist, syrup like DNAPL in clay/sand lenses				4.5	6.0		
					5.5	2.8		
-7.5	BOTTOM OF TEST PIT @ 6.0ft BGS							
-10.0	NOTES: 1. Photograph taken of trench. 2. Clay/Sand lenses contain frozen DNAPL. 3. Elevation of S end of TT49-01 is 616.9ft AMSL, and the N end is 617.7ft AMSL.							
-12.5								
-15.0								
-17.5								
-20.0								
-22.5								
-25.0								
-27.5								
-30.0								
-32.5								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇

SECTION 5
GEOPROBE STRATIGRAPHIC LOGS

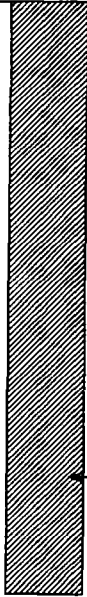
FIELDS BROOK SUPERFUND SITE
ASHTABULA, OHIO

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-86)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP1-01
DATE COMPLETED: JANUARY 30, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	615.2					
	ML-SILT (TOPSOIL), with clay, trace to little fine sand, low plasticity, dark gray, moist, rootlets	614.7					
-2.5	ML-SILT, with clay, trace to little fine sand, trace gravel, medium to low plasticity, light gray, moist, mottled, fractured horizontally and vertically, fractured surfaces oxidized, rootlets	611.2		1GP			1448 (0-5ft)
-5.0	- very moist to wet, slightly dilatant, slight chemical odor						
-7.5	ML-CLAYEY SILT (LACUSTRINE), trace to little fine sand, trace gravel, hard, gray, moist, varving visable (bedding planes), slight to faint chemical odor			2GP			45.6 5-10ft)
-10.0	- very faint chemical odor						
-12.5	- more competent			3GP			28.1 (10-15ft)
-15.0	BOTTOM OF BOREHOLE @ 15.0ft. BGS	600.2					
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

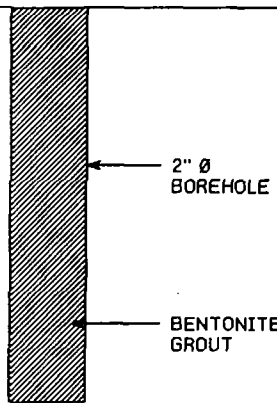
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-65)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP2-01
DATE COMPLETED: JANUARY 30, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	615.5					
	ML-SILT (TOPSOIL), with trace clay, with fine sand, low plasticity, dark gray, moist, rootlets	615.0					
-2.5	ML-SILT, with clay, with to trace fine sand, trace gravel, medium plasticity, light gray, moist, mottled, oxidized, rootlets, fractured horizontally and vertically, fractured surfaces oxidized			1GP			6686 (0-5ft)
-5.0	- with fine sand, wet, dilatant, slight chemical odor @ 1.5ft BGS			2AGP			9366 (5-7ft)
-7.5	- fractured horizontally and vertically, fractures oxidized with some evidence of impact @ 2.0ft BGS	608.0		2GP			710 (7-10ft)
	- horizontal fracture, strong chemical odor @ 4.8ft BGS			2BGP			
-10.0	- strong to slight chemical odor @ 5.0ft BGS	605.5					
	ML-CLAYEY SILT (LACUSTRINE), trace fine sand, trace gravel, low plasticity, gray, moist, varved appearance						
-12.5	BOTTOM OF BOREHOLE @ 10.0ft. BGS						
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

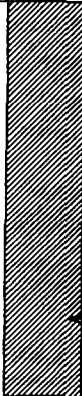
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-64)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP3-01
DATE COMPLETED: JANUARY 30, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	615.6					
2.5	ML-SILT (TOPSOIL), trace fine sand, low plasticity, black, moist, rootlets	615.4		1GP			130 (0-5ft)
5.0	ML-SILT, with clay, trace to little fine sand, trace gravel, gray, very moist, slightly dilatant, fractured horizontally and vertically, oxidized, mottled, slight odor - moist, fractured, slight odor, oxidized, mottled, fractured horizontally and vertically @ 4.0ft BGS						
7.5	SM-SAND seam, with silt, brown, wet, dilatant @ 3.5ft BGS - fractured, mottled, slight chemical odor @ 5.0ft BGS	608.6		2GP			8400 (5-10ft)
10.0	CL-SILTY CLAY (LACUSTRINE), trace fine sand, trace gravel, low plasticity, gray, moist, varved appearance, strong chemical odor - slight chemical odor @ 9.0ft BGS	605.6		2AGP			5650 7-10ft)
12.5	BOTTOM OF BOREHOLE @ 10.0ft. BGS			2BGP			367 (10ft)
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

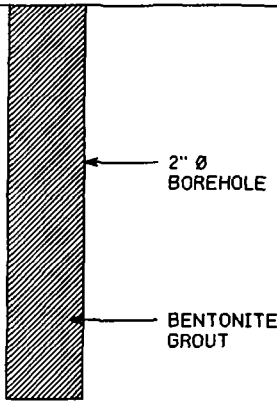
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-58)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP4-01
DATE COMPLETED: JANUARY 31, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	615.1					
	ML-SILT (TOPSOIL), with fine sand, trace clay, low plasticity, brown, moist, rootlets	614.6					
-2.5	ML-SILT, with fine sand, with to trace clay, trace gravel, medium plasticity, brown, moist, rootlets, fractured - very moist, slightly dialtant, oxidized @ 2.0ft BGS			1GP			43 (0-5ft)
-5.0	- moist, light gray, fractured horizontally and vertically, surfaces oxidized, slight chemical odor @ 4.0ft BGS			2AGP			2300 (5-6ft)
-7.5	- fractures more visable, oxidized, mottled, strong chemical odor @ 5.0ft BGS	608.6		2GP 2BGP			1338 (6.5-10ft)
-10.0	ML-CLAYEY SILT (LACUSTRINE), with fine sand, trace gravel, hard, low plasticity, gray, moist, mottled, strong odor, varved appearance - slight chemical odor @ 7.5ft BGS BOTTOM OF BOREHOLE @ 10.0ft. BGS	605.1		2CGP			46 (10ft)
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-59)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP5-01
DATE COMPLETED: JANUARY 31, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	615.5					
2.5	ML-SILT (TOPSOIL), with fine sand, with to trace clay	615.0		1GP			417 (0-51t)
5.0	ML-SILT, with clay, trace fine sand, trace gravel, low to medium plasticity, gray, moist, rootlets - very moist, brown, fractured, oxidized @ 1.5ft BGS	610.5		2AGP			931 (5-71t)
7.5	ML-CLAYEY SILT (LACUSTRINE), with to trace fine sand, trace gravel, hard, low plasticity, gray, moist, varved appearance, slight odor			2GP			
10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	605.5		2BGP			5.5 (8.5-101t)
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

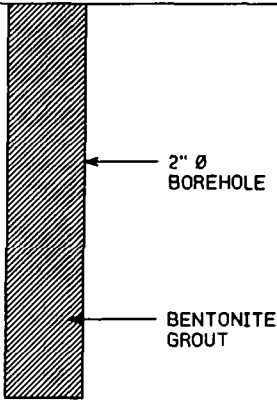
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-61)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP6-01
DATE COMPLETED: JANUARY 31, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	615.4					
2.5	ML-SILT (TOPSOIL), with to trace fine sand, with clay, low plasticity, black, moist, rootlets	614.4		1GP			21 (0-5ft)
5.0	ML-SILT, with clay, with fine sand, trace gravel, low plasticity, brown, moist, rootlets, fractured horizontally and vertically, oxidized, mottled - very moist @ 2.0ft BGS			2AGP			980 (5-6ft)
7.5	ML-CLAYEY SILT (LACUSTRINE), with fine sand, trace gravel, hard, low plasticity, gray, moist, varved appearance, definite chemical odor	609.4		2BGP 2GP			808 (6-8ft)
10.0	- faint odor @ 8.0 to 10.0ft BGS	605.4		2CGP			800 (5-10ft)
	BOTTOM OF BOREHOLE @ 10.0ft. BGS						38 (8-10ft)
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-60)
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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP7-01
DATE COMPLETED: JANUARY 31, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	615.4					
	ML-SILT (TOPSOIL), with fine sand, trace clay, low plasticity, black, moist, rootlets	614.4					
-2.5	ML-SILT, with clay, trace to with fine sand, trace gravel, low to medium plasticity, brown, moist, mottled, fractured horizontally and vertically, oxidized			1GP 1AGP			8 (0-4ft)
-5.0	- mottling more evident @ 3.0ft BGS	611.4		1BGP			31 (4-5ft)
-7.5	ML-CLAYEY SILT (LACUSTRINE), with fine sand, trace gravel, hard, low plasticity, gray, moist, varved appearance						
-7.5	- very stiff, fractured @ 5.0ft BGS			2GP			313 (5-10ft)
-10.0	- strong chemical odor, red hematite staining @ 8.0 to 10.0ft BGS			2AGP			9950 (8-10ft)
-12.5	- hard, low plasticity, no odor detected @ 10.0 to 15.0ft BGS						
-15.0				3GP			4.0 (10-15ft)
-15.0	BOTTOM OF BOREHOLE @ 15.0ft. BGS	600.4					
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP8-01
DATE COMPLETED: JANUARY 31, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	615.4					
	ML-SILT (TOPSOIL), with fine sand, trace clay, low plasticity, black, moist, rootlets	614.4		1GP			
-2.5	ML-SILT, with clay, trace to with fine sand, trace gravel, low to medium plasticity, brown, moist, mottled, fractured horizontally and vertically, oxidized - mottling more evident @ 3.0ft BGS	610.4					
-5.0	ML-CLAYEY SILT, trace fine sand, trace gravel, low to medium plasticity, gray, competent, higher moisture content then at GP7-01			2GP			
-7.5				2AGP			
-10.0	- low plasticity, varying more visible, decrease in moisture content @ 10.0 to 15.0ft BGS						1.3 (8-10ft)
-12.5				3GP 3AGP 3BGP			0.5 (10-12.5ft) 0.1 (12.5-15ft)
-15.0	- increase in moisture content, varying not as evident @ 14.5 to 15.0ft BGS BOTTOM OF BOREHOLE @ 15.0ft. BGS	600.4					
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP9-01
DATE COMPLETED: JANUARY 31, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	616.3					
2.5	ML-SILT (TOPSOIL), with fine sand, trace to with clay, low plasticity, black, moist, rootlets	615.3		1GP			
	ML-SILT, with to and clay, with fine sand, trace gravel, low plasticity, brown, moist, rootlets, fractured horizontally and vertically, oxidized	612.3		1AGP			353 (3-5ft)
5.0	- mottled @ 3.0 to 4.0ft BGS						
7.5	ML-CLAYEY SILT (LACUSTRINE), with to trace fine sand, trace gravel, low plasticity, gray, moist, varved appearance, slight chemical odor			2GP 2AGP 2BGP			229 (5-7.5ft) 1.7 (7.5-10ft)
10.0	- varving visable @ 5.0 to 6.0ft BGS - varving less evident @ 6.0 to 7.0ft BGS - varving evident @ 6.0 to 10.0ft BGS						
	BOTTOM OF BOREHOLE @ 10.0ft. BGS	606.3					
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

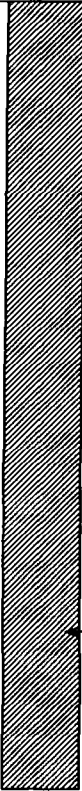
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-57)
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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP10-01
DATE COMPLETED: FEBRUARY 1, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	623.0					
2.5	ML-SILT (TOPSOIL), with clay, little fine sand, low plasticity, black, moist, rootlets SM-SILTY SAND, trace gravel, fine grained, poorly graded, dark brown/black, moist ML-SILT, with to little clay, trace fine sand, low plasticity, dark brown, moist	622.8 622.5 622.0		1GP			0.0
5.0	SM-SILTY SAND, trace fine gravel, fine grained, poorly graded, wet, dilatant, layering visible						
7.5	- PT-PEAT seam 1/2" thick-not fibrous, no odor @ 4.5ft BGS - very wet, silty to and silt, fine grained, very dilatant @ 5.0ft BGS			2GP			0.0
10.0	ML-SILT, with clay, trace fine sand, low plasticity, brown, moist, mottled, fractured horizontally and vertically, oxidized, gradual contact	613.0					
12.5	ML-CLAYEY SILT (LACUSTRINE), trace fine sand, trace gravel, low plasticity, gray, moist, varving beds slightly visible	611.5		3GP 3AGP 3BGP			144 755 (11.5-13ft)
15.0	- lower plasticity @ 15.0 to 20.0ft BGS			4AGP			1531 (15-17ft)
17.5				4GP 4BGP			770 (17-19ft)
20.0	BOTTOM OF BOREHOLE @ 20.0ft. BGS	603.0		4CGP			2.7 (19-20ft)
22.5							
25.0							
27.5							
30.0							
32.5							

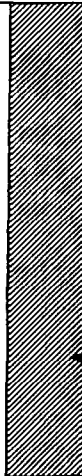
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
 WATER FOUND ▼ STATIC WATER LEVEL ▼
 CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-56)
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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP11-01
DATE COMPLETED: FEBRUARY 1, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	616.9					
-2.5	ML-SILT (TOPSOIL), with to little clay, trace to little fine sand, low plasticity, black, moist, rootlets	616.4		1GP			
-5.0	ML-SILT, with to little clay, little fine sand, trace gravel, moderate plasticity, brown, moist, rootlets, slightly dilatant	612.7 612.4		1AGP			35.4 (4-51t)
-7.5	SM-SAND seam with silt, fine grained, poorly graded, light gray, oxidized, moist	609.4		2AGP 2GP			3500 (6.5-7.5ft)
-10.0	ML-SILT, with clay, trace fine sand, trace gravel, low plasticity, brown, moist, mottled, fractured horizontally and vertically, oxidized - very moist, medium to low plasticity, brown @ 5.0ft BGS - vertical fracture, evidence of impact, strong odor @ 7.0 to 7.5ft BGS	604.9		2BGP			150.1 (7-101t)
-12.5	ML-CLAYEY SILT (LACUSTRINE), trace fine sand, trace gravel, low plasticity, gray, moist - vertical fracture, evidence of impact, strong odor @ 7.5 to 7.8ft BGS - slight increase in clay content, more competent @ 10.0ft BGS			3GP 3AGP			25 (11.5-121t)
-15.0	BOTTOM OF BOREHOLE @ 12.0ft. BGS						
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP12-01
DATE COMPLETED: FEBRUARY 3, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	616.7					
	SP/GP-COARSE SAND and GRAVEL (FILL), brown, dry						
2.5	ML-SANDY SILT (FILL), trace clay and gravel, brown, moist	614.7 613.7		1GP			25 (3.5- 4.5ft)
5.0	ML-SILT, sandy silt, trace clay and gravel, dark gray, presence of black organic lenses (topsoil)	611.7		2AGP			2703 (5.5- 7ft)
7.5	ML-SILTY SAND, trace gravel, low plasticity, brown, moist	610.2		2GP			
10.0	ML-CLAYEY and SANDY SILT (LACUSTRINE), trace gravel, gray, moist, varving visible			2BGP 2CGP			18 (7- 8ft) 1 (9- 10ft)
	BOTTOM OF BOREHOLE @ 10.0ft. BGS	606.7					
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

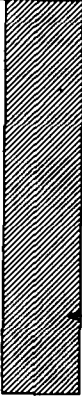
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇ STATIC WATER LEVEL ∇
CHEMICAL ANALYSIS \bigcirc

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP13-01
DATE COMPLETED: FEBRUARY 3, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	615.7					
2.5	ML-SANDY SILT (FILL), some clay and gravel, few rootlets, low plasticity, light brown, moist	612.2		IGP IAGP			9 (2-3ft)
5.0	TOPSOIL, sandy silt, dark black, wet	611.2		2AGP			136 (5-6.5ft)
7.5	ML-SAND and CLAYEY SILT, trace gravel, gray, moist, light chemical odor - becoming with visible varving, dry @ 6.5ft BGS			2GP 2BGP			6 (8-9ft)
10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	605.7					
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

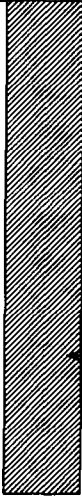
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-54)
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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11876
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP15-01
DATE COMPLETED: FEBRUARY 1, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	617.4					
2.5	ML-SILT (TOPSOIL), with to little clay, trace fine sand, low plasticity, dark brown, moist, rootlets	616.4		1GP			
5.0	ML-SILT, with clay, trace fine sand, trace gravel, low plasticity, brown, moist, fractured horizontally and vertically, oxidized, mottled - very moist to wet, dilatant @ 2.5 to 3.5ft BGS - slight to strong chemical odor @ 5.0 to 7.5ft BGS			1AGP			240 (3-5ft)
7.5		609.9		2AGP			2500 (5-9ft)
10.0	ML-CLAYEY SILT (LACUSTRINE), trace fine sand, trace gravel, low plasticity, gray, moist, varving bedding planes visable, slight chemical odor			2GP			
12.5				2BGP			148 (9-10ft)
12.5	BOTTOM OF BOREHOLE @ 12.5ft. BGS	604.9		3GP			61
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

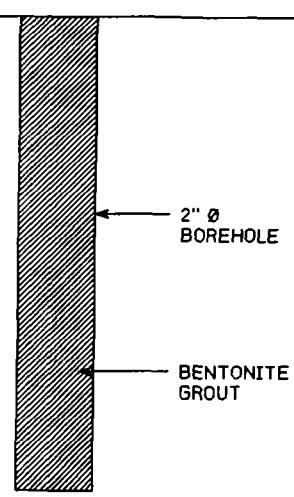
STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP16-01
DATE COMPLETED: FEBRUARY 1, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	616.1					
	ML-SILT (TOPSOIL), with to little clay, little fine sand, low plasticity, dark brown, moist, rootlets	615.8 615.7					
2.5	SP-SAND, with silt, trace gravel, fine grained, poorly graded, brown, moist			1GP			
5.0	ML-SILT, with to and clay, trace fine sand, trace gravel, low plasticity, brown, moist, rootlets, fractured - very moist, slightly dilatant, faint odor @ 2.0ft BGS			1AGP			813 (3-5ft)
7.5	- moist, fractured horizontally and vertically, slight chemical odor @ 3.0ft BGS	609.6		2AGP			4000 (5-7ft)
10.0	- SM-SAND (LOAM), little silt, fine grained, poorly graded, brown, moist, strong chemical odor @ 5.3 to 5.5ft BGS			2GP			
12.5	ML-CLAYEY SILT (LACUSTRINE), trace fine sand, trace gravel, low plasticity, gray, moist, varved, strong chemical odor, - slight odor @ 7.5ft BGS	604.1		2BGP			494.1 (9-10ft)
15.0	- extremely hard, slight increase in clay content, more competent, varving less visable @ 10.0ft BGS			3GP 3AGP			161 (11-12ft)
	BOTTOM OF BOREHOLE @ 12.0ft. BGS						
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							



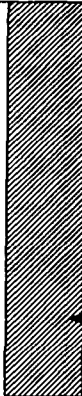
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP17-01
DATE COMPLETED: FEBRUARY 2, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	618.8					
2.5	ML-SANDY SILT (TOPSOIL), trace gravel, dark brown, wet	617.8		IGP			
5.0	ML-CLAYEY and SANDY SILT, trace gravel, low plasticity, brown, moist, varving visible			IAGP			1.3 (3-5ft)
7.5		610.8		2AGP 26P			1.0 (7-8.0ft)
10.0	ML-CLAYEY SILT (LACUSTRINE), trace fine grained sand and gravel, low plasticity, gray, moist to dry, varving visible	608.8		2BGP			1.5 (8-10ft)
	BOTTOM OF BOREHOLE @ 10.0ft. BGS						
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

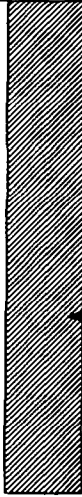
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP18-01
DATE COMPLETED: FEBRUARY 2, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	615.8					
	ML-SILT (TOPSOIL), trace sand and gravel, dark brown, wet	614.8		IGP			
2.5	ML-CLAYEY and SANDY SILT, trace gravel, low plasticity, varved from 3.5ft BGS			1AGP			3.0 (3- 5ft)
5.0				2AGP			224 (5- 7.0ft)
7.5	ML-CLAYEY SILT (LACUSTRINE), some sand, trace gravel, gray, moist, varved to 10.0ft BGS	608.8		2GP			
10.0	- wet @ 10.0ft BGS			2BGP			438 (7.5- 9.5ft)
12.5	BOTTOM OF BOREHOLE @ 12.5ft. BGS	603.3		3AGP 3GP			54 (10- 12ft)
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-98)
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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP19-01
DATE COMPLETED: FEBRUARY 2, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	616.3					
	ML-SILT (TOPSOIL), trace sand and gravel, dark brown, moist	615.6					
-2.5	ML-CLAYEY and SANDY SILT, trace gravel, varving visible from 3.0ft BGS, strong odor			1GP			
-5.0				1AGP			3568 (3-5ft)
-7.5	- becoming gray/brown from 6.0ft BGS			2AGP			6189 (5.5-7.5ft)
				2GP			
-10.0	ML-CLAYEY SILT (LACUSTRINE), some sand, trace gravel, gray, moist, varving visible	607.3		2BGP			891 (9-10ft)
-12.5				3AGP			30 (11-13ft)
				3GP			
-15.0	BOTTOM OF BOREHOLE @ 15.0ft. BGS	601.3		3BGP			0.3 (14-15ft)
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP20-01
DATE COMPLETED: FEBRUARY 2, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	616.5					
	ML-SANDY and CLAYEY SILT (FILL), trace gravel	616.2					
2.5	ML-SILT (TOPSOIL), trace sand and gravel, dark brown, moist	615.2		1GP			
	ML-CLAYEY and SANDY SILT, trace gravel, low plasticity, brown			1AGP			
5.0				2AGP			32 (3-5ft) 2.0 (5-8ft)
7.5	ML-CLAYEY SILT (LACUSTRINE), some sand, trace gravel, gray, moist, varving visible	610.5		2GP 2BGP			43 (7-9ft)
10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	606.5					
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

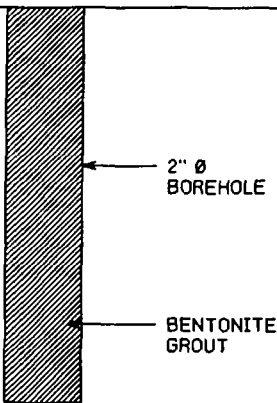
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP21-01
DATE COMPLETED: FEBRUARY 3, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	614.0					
-2.5	ML-CLAYEY and SANDY SILT, trace gravel, trace rootlets, low plasticity, brown			IGP			
-5.0	- becoming very soft and saturated @ 5.0ft BGS	608.0		1AGP			3.0 (4- 5ft)
-7.5	ML-SANDY and CLAYEY SILT (LACUSTRINE), trace gravel, varving visible horizontally			2AGP			1286 (5- 6ft)
-10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	604.0		2GP 2BGP 2CGP			81 (6.5- 8ft)
-12.5							1 (9- 10ft)
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

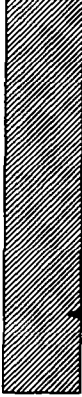
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP22-01
DATE COMPLETED: FEBRUARY 3, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	613.5					
	ML-SANDY SILT (TOPSOIL), trace rootlets	613.0					
-2.5	ML-CLAYEY SILT, some sand, trace gravel, slightly plastic, moist			1GP 1AGP			4 (2-3ft)
-5.0	ML-SANDY and CLAYEY SILT (LACUSTRINE), trace gravel, varving visible, dry to moist	610.5		1BGP			77 (4-5ft)
-7.5				2GP 2AGP			4 (5.5-7ft)
-10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	603.5		2BGP			0.8 (8-10ft)
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

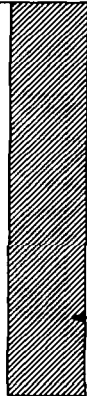
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP23-01
DATE COMPLETED: FEBRUARY 1, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	614.2					
2.5	ML-SILT (TOPSOIL), with clay, trace fine sand, low plasticity, black, moist, rootlets	613.5		1GP			
5.0	ML-SILT, with clay, little fine sand, trace gravel, low plasticity, brown, moist, fractured horizontally and vertically, oxidized, mottled			1AGP			69.3 (3-5ft)
7.5	ML-CLAYEY SILT (LACUSTRINE), trace fine sand, trace gravel, low plasticity, gray, moist, varving present	608.7		2GP			
10.0	- increase in clay content, more massive in appearance @ 9.5 to 10.0ft BGS BOTTOM OF BOREHOLE @ 10.0ft. BGS	604.2		2AGP 2BGP			15.3 (5.5-7.5ft) 14.3 (7.5-10ft)
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

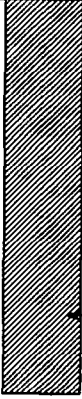
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP24-01
DATE COMPLETED: FEBRUARY 2, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	613.8					
2.5	ML-SILT (TOPSOIL), trace sand and clay, dark brown, moist	612.8		IGP			
	ML-CLAYEY SILT, trace gravel and sand, low plasticity, brown, moist			IAGP			0.3 (3-5ft)
5.0	- slight chemical odor @ 5.0ft BGS			2AGP			305 (5.5-7ft)
7.5		605.8		2GP			58 (8-10ft)
10.0	ML-CLAYEY SILT (LACUSTRINE), trace fine grained sand and gravel, low plasticity, gray, moist, varving visible	603.8		2BGP			
	BOTTOM OF BOREHOLE @ 10.0ft. BGS						
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP25-01
DATE COMPLETED: FEBRUARY 2, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	613.3					
-2.5	ML-SILT (TOPSOIL), trace sand and gravel, dark brown, dry	612.3		1GP			2.0 (3-5ft)
-5.0	ML-CLAYEY SILT, trace sand and gravel, low plasticity, brown, moist			1AGP			
-7.5	ML-CLAYEY SILT (LACUSTRINE), trace fine grained sand and gravel, low plasticity, gray, moist to dry, varving visible	607.3		2AGP			127 (5.5-6.5ft)
-10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	603.3		2GP 2BGP			11 (7-8ft)
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP26-01
DATE COMPLETED:
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	612.8					
	ML-SANDY SILT (TOPSOIL), trace gravel, dark brown, moist	611.8		1GP			
-2.5	ML-SANDY SILT, some clay, trace gravel, medium to low plasticity, brown, moist			1AGP			
-5.0	- becoming soft, wet @ 4.0ft BGS - becoming varved from 5.0ft BGs, strong chemical odor	606.8		2AGP			1 (3-5ft) 10718 (5-6ft)
-7.5	ML-SANDY SILT (LACUSTRINE), some clay, trace gravel, low plasticity			2GP 2BGP			5 (7-8ft)
-10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	602.8		2CGP			1 (9-10ft)
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

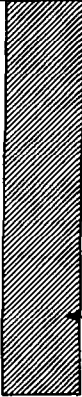
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
 WATER FOUND ▼ STATIC WATER LEVEL ▼
 CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP27-01
DATE COMPLETED: FEBRUARY 3, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	612.7					
2.5	ML-SANDY SILT (TOPSOIL), trace clay, few rootlets, dark brown, dry	612.0		1GP			
	ML-SANDY SILT, some clay, trace gravel, low plasticity, brown, moist - becoming with visible varving from 3.0ft BGS, chemical odor	608.7		1AGP			
5.0	ML-SANDY SILT (LACUSTRINE), some clay, trace gravel, visible varving (horizontal)			1BGP			30 (3-41t) 8659 (4-51t)
7.5				2GP			4 (5.5-7.5ft)
10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	602.7		2AGP			
12.5				2BGP			0 (9-101t)
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

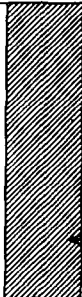
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP28-01
DATE COMPLETED: FEBRUARY 1, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	612.1					
	ML-SILT (TOPSOIL), with clay, with to little fine sand, low plasticity, black, moist, rootlets	611.6	 <p>2" Ø BOREHOLE</p> <p>BENTONITE GROUT</p>	IGP			
-2.5	ML-SILT, with to and clay, trace fine sand, trace gravel, low plasticity, brown, moist, fractured horizontally and vertically, oxidized, mottled, rootlets			IAGP			
-5.0	- no rootlets @ 2.0ft BGS - hard @ 3.0ft BGS	608.1		IBGP			
-7.5	ML-CLAYEY SILT (LACUSTRINE), trace to little fine sand, trace gravel, low plasticity, gray, moist, varving present			2GP			
	- extremely hard, varving very visable from 5.0 to 7.5ft BGS	604.6					
	BOTTOM OF BOREHOLE @ 7.5ft. BGS						
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP29-01
DATE COMPLETED: FEBRUARY 1, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	612.8					
	ML-SILT (TOPSOIL), with clay, little fine sand, low plasticity, black, moist, rootlets	612.3					
-2.5	ML-SILT, with clay, with to little fine sand, trace gravel, low plasticity, brown, moist, fractured horizontally and vertically, oxidized, mottled, rootlets			1GP			
-5.0	- and fine sand, wet, dilatant, no rootlets from 2.0 to 2.5ft BGS - very hard, fracturing very visable from 2.5 to 4.8ft BGS	608.0		1AGP			194.6 (3.5-5ft)
-7.5	ML-CLAYEY SILT (LACUSTRINE), trace to little fine sand, trace gravel, hard, low plasticity, gray, moist, varving present			2AGP			268 (5-7.5ft)
-10.0	- very hard, low plasticity, varving very visable @ 5.0ft BGS - slight clay content increase-more competent @ 9.5 to 10.0ft BGS	602.8		2GP			14.6 (9-10ft)
-12.5	BOTTOM OF BOREHOLE @ 10.0ft. BGS			2BGP			
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

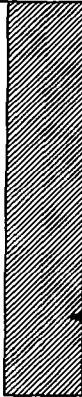
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP30-01
DATE COMPLETED: FEBRUARY 1, 2001
DRILLING METHOD: 2" Ø GEOPORBE
CRA SUPERVISOR: D.GRAY

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	612.5					
	ML-SILT (TOPSOIL), with clay, with to little fine sand, low plasticity, black, moist, rootlets	611.8		1GP			
-2.5	ML-SILT, with to and clay, little fine sand, trace gravel, low plasticity, brown, moist, rootlets - very moist to wet, dilatant, oxidized @ 2.0ft BGS			1AGP			51.6 (3-5ft)
-5.0	ML-CLAYEY SILT (LACUSTRINE), trace fine sand, trace gravel, low plasticity, gray, moist, varving present	607.0		2AGP			349 (5.5-7.5ft)
-7.5				2GP			6.1 (7.5-10ft)
-10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	602.5		2BGP			
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP31-01
DATE COMPLETED: FEBRUARY 4, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	624.2					
	TOPSOIL, silt and sand, low to medium plasticity, dark brown, moist, rootlets	624.0					
2.5	ML-SILT (FILL), some fine sand, trace clay, trace gravel, medium plasticity, medium brown to dark brown, some gray, moist, piece of porcelain (foreign material)	622.7		1GP			
5.0	ML-SILT, some fine sand, trace clay, low plasticity, medium brown, moist, varving visible (horizontal), rootlets			1AGP			56 (4-4.5ft)
7.5	CL-CLAYEY SILT, trace fine sand, trace gravel, medium to high plasticity, gray to dark gray, rootlets, moist to very moist, same as above, more clean, less fine sand	617.9		2AGP 2GP			77 (6.5-7ft)
10.0							
12.5							
15.0	- thin layer of sand, some clay, low plasticity, dark gray, moist @ 14.8ft BGS			3GP			
17.5	CL-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, medium plasticity, gray, moist, free product, chemical odor	607.5		3AGP			3476 (14-14.5ft)
20.0	BOTTOM OF BOREHOLE @ 20.0ft. BGS	604.2					
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
CHEMICAL ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-79)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP31A-01
DATE COMPLETED: FEBRUARY 4, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	624.2					
	TOPSOIL, silt and sand, rootlets, low to medium plasticity, dark brown, moist	623.9					
-2.5	ML-SILT (FILL), some fine sand, trace clay, trace gravel, medium plasticity, brown, some gray, moist	622.0		1GP			
-5.0	ML-SILT and FINE SAND, trace clay, trace gravel, rootlets, low to medium plasticity, light brown, varving visible (horizontal)			1AGP			2.4 (4.5-5ft)
-7.5	- more clay, little gravel, medium plasticity @ 6.8ft BGS			2GP			
-10.0	CL-CLAY, silt, little sand, trace gravel, rootlets, high plasticity, gray to dark gray, moist	615.4		2AGP			24 (9-10ft)
-12.5	ML-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, low to medium plasticity, gray, moist	613.1		3GP			
-15.0	BOTTOM OF BOREHOLE @ 15.0ft. BGS	609.2		3AGP			18 (14.5-15ft)
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

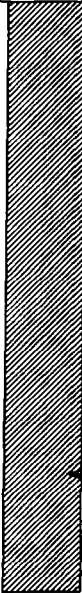
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP32-01
DATE COMPLETED: FEBRUARY 4, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: D. MAPP

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	617.0					
	ML/SM-SILT and SAND (FILL), trace clay, medium plasticity, gray brown, moist, trace rootlets	615.1					
2.5	TOPSOIL, silt, some sand, medium plasticity, trace clay, trace gravel, brown, rootlets	614.8 614.1		IGP			
	ML-SILT, little clay, trace fine sand, medium to high plasticity, gray to light brown, moist						
5.0	CL-CLAYEY SILT, trace fine sand, high plasticity, gray to light brown, moist						
	SM-SAND, some silt, trace clay, low plasticity, gray, moist	610.3 609.8		2GP 2AGP			
7.5	ML-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, low plasticity, gray, varving visible (horizontal)			2BGP			
10.0	- free product @ 11.0 to 15.0ft BGS						1100 (8-10ft)
12.5							
15.0	BOTTOM OF BOREHOLE @ 15.0ft. BGS	602.0					
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

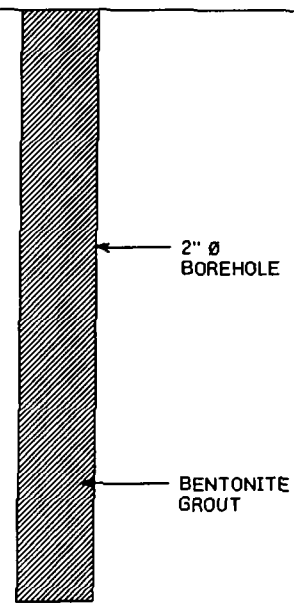
STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-69)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP32A-01
DATE COMPLETED:
DRILLING METHOD:
CRA SUPERVISOR:

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	617.0					
	Drove down to 10.0ft BGS						
-2.5							
-5.0							
-7.5							
-10.0		607.0					
-12.5	ML-CLAYEY SILT (LACUSTRINE), little fine sand, low plasticity, gray, moist, chemical odor, free product						
-15.0		602.0					
	BOTTOM OF BOREHOLE @ 15.0ft. BGS						
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							



1GP			
IAGP			

7450
(14.5-15ft)


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP33-01
DATE COMPLETED: FEBRUARY 2, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: D. MAPP

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	617.8					
	ML-SILT, with to and clay, little sand, rootlets, low to medium plasticity, dark to red brown, oxidized, moist	617.3		1GP			
-2.5	ML-SILT, some clay, rootlets, medium plasticity, gray to gray brown, moist, fractured vertical and horizontal			1AGP			
-5.0	CL-CLAY, some silt, little sand, medium plasticity, gray brown, moist	613.3		2AGP			80 (3-5ft)
		612.3		2GP			234 (5-5.5ft)
-7.5	ML-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, low plasticity, gray, moist, varving visible			2BGP			129 (8-10ft)
-10.0				3GP			
-12.5				3AGP			24.5 (14-15ft)
-15.0	BOTTOM OF BOREHOLE @ 15.0ft. BGS	602.8					
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-103)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP34-01
DATE COMPLETED: FEBRUARY 2, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: D. MAPP

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	623.3					
2.5	ML-SILT, with to and clay, little sand, rootlets, low to medium plasticity, dark brown, moist	622.7		1GP			
5.0	ML-SILT, little clay, little fine sand, trace gravel, rootlets, low plasticity, brown, moist, oxidized, fractured vertical and horizontal - dark brown @ 3.5ft BGS			1AGP			0 (3-4ft)
7.5	CL-CLAY, trace silt, little sand, gray	616.8		2AGP			0 (6.5-8ft)
10.0	CL-CLAY, trace silt, medium to high plasticity, gray to brown	615.3		2GP			
12.5				3AGP			35 (10-12ft)
15.0	ML-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, low plasticity, gray, moist, varving visible	610.8		3GP			
17.5	BOTTOM OF BOREHOLE @ 17.0ft. BGS	606.3		4AGP			0 (13-13.5ft)
20.0				4GP			
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-80)
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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP35-01
DATE COMPLETED: FEBRUARY 4, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	618.5					
	ML-SILT (FILL), some fine sand, little gravel, trace clay, medium plasticity, light brown, moist	617.9					
	CRUSHED STONE (1.4" Ø), low plasticity, black, chemical odor	617.3					
-2.5	ML-CLAYEY SILT, some fine sand, little rootlets, medium plasticity, gray with light brown, oxidation			1GP			
-5.0				1AGP			30 (4.5- 5ft)
-7.5	ML-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, low plasticity, gray, moist, varving visible (horizontal)	611.7		2AGP 2GP			32 (6.8- 7.2ft)
-10.0	BOTTOM OF BOREHOLE @ 9.0ft. BGS	609.5		2BGP			2.4 (8.5- 9ft)
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-81)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP36-01
DATE COMPLETED: FEBRUARY 4, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	618.1					
	ML-SILT (TOPSOIL), some sand, trace gravel, trace clay, rootlets, medium plasticity, brown to light brown, moist	617.8					
-2.5	ML-SILT, little fine sand, trace clay, trace gravel, rootlets, low plasticity, moist ~ slightly more clay, oxidation @ 2.0ft BGS			IGP 1AGP			7.6 (2.7-3ft)
-5.0				2AGP			33 (5-6ft)
-7.5	ML-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, low plasticity, gray, moist, visible varving (horizontal)	612.1		2GP			
-10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	608.1		2BGP			28 (8.5-10ft)
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

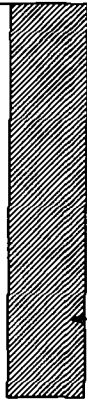
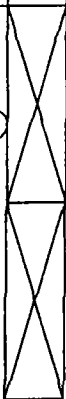
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○




STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-104)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP37-01
DATE COMPLETED: FEBRUARY 2, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: D. MAPP

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	616.9					
2.5	ML-SILT (FILL), trace clay, trace fine grained sand, trace gravel, rootlets, medium plasticity, brown to dark brown, moist	615.9		1AGP			0 (1-1.5ft)
	ML-SILT, trace clay, trace fine grained sand, trace gravel, low plasticity, light to medium brown, moist	613.4		1BGP			7.01 (2.5-3.5ft)
5.0	- very moist @ 2.5 to 3.5ft BGS			2AGP			0 (5-7ft)
7.5	ML-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, low plasticity, gray, moist			2GP			
10.0	- slightly less clay, varving visible @ 9.0ft BGS			2BGP			1.0 (8-10ft)
	BOTTOM OF BOREHOLE @ 10.0ft. BGS	606.9					
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

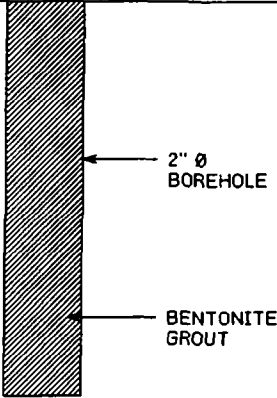
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND  STATIC WATER LEVEL 
CHEMICAL ANALYSIS 

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-105)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP38-01
DATE COMPLETED: FEBRUARY 2, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: D. MAPP

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	617.9					
-2.5	ML-SILT (FILL), with to and clay, trace fine grained sand, medium plasticity, brown to light brown with gray, moist	612.4		1GP			0 (1-1.5ft)
-5.0	- slightly more clay, gray @ 5.0ft BGS			2AGP			0 (5-5.5ft)
-7.5	ML-CLAYEY SILT (LACUSTRINE), little fine grained sand, trace gravel, low to medium plasticity, gray, very moist - slightly less clay, varving visible @ 6.5ft BGS			2GP			
-10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	607.9		2BGP			0 (9.5-10ft)
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP39-01
DATE COMPLETED: FEBRUARY 2, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: D. MAPP

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	621.2					
-2.5	ML-SILT (FILL), some sand, trace clay, trace gravel, low to medium plasticity, brown to light brown, moist	619.2		1GP			0 (3-5ft)
-5.0	ML-SILT, trace clay, trace sand, some gravel, low plasticity, brown to light brown and some gray, dry to moist	615.2		1AGP			0 (6-7ft)
-7.5	ML-SILT, with clay, trace fine sand, some gravel, low to medium plasticity, gray, varving visible, fractured horizontal and vertical	613.2		2AGP			12.8 (7-8ft)
-10.0	- brown to light brown @ 7.0ft BGS			2GP			
-12.5	ML-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, low to medium plasticity, gray, moist			2BGP			
-15.0	- slight decrease in clay, varving visible @ 10.0ft BGS			3GP			0 (12-13ft)
-17.5				3AGP			
-20.0	BOTTOM OF BOREHOLE @ 13.0ft. BGS	608.2					
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-107)
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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP42-01
DATE COMPLETED: FEBRUARY 2, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: D. MAPP

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	618.6					
	SM-SANDY SILT (FILL), trace clay, trace gravel, low to medium plasticity, brown with some gray, moist	617.8 617.3		1GP 1AGP			5.9 (0.9-1.3ft)
-2.5	SM/ML-SAND and SILT, trace clay, trace gravel, fine grained sand, low plasticity, moist			2AGP			283 (6-6.5ft)
-5.0	ML-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, low plasticity, light brown, varving visible (horizontal)			2GP			
-7.5	- slightly more clay, gray @ 6.3ft BGS			2BGP			32 (9.5-10ft)
-10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	608.6					
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

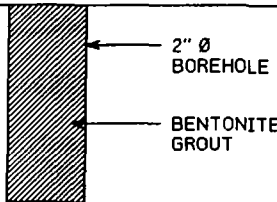
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
CHEMICAL ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP43-01
DATE COMPLETED: FEBRUARY 2, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: D. MAPP

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	618.8					
	SM-SILTY SAND (FILL), little clay, trace gravel, trace rootlets, low to medium plasticity, brown with some gray, moist	617.9					
-2.5	ML-SILT, trace fine sand, trace gravel, trace rootlets, low plasticity, light brown, moist	616.0 615.7		1AGP 1GP 1BGP			5.1 (2.3-2.7ft) 26 (2.8-3.0ft) 36 (4.5-5ft)
-5.0	SM/ML-SAND and SILT, trace clay, trace gravel, moist			ICGP			
-7.5	ML-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, low plasticity, gray, moist, slight varving (horizontal)	613.8					
-7.5	BOTTOM OF BOREHOLE @ 5.0ft. BGS						
-10.0							
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

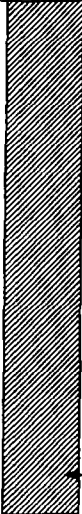
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇ STATIC WATER LEVEL ∇
CHEMICAL ANALYSIS \bigcirc

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-70)
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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP44-01
DATE COMPLETED: FEBRUARY 3, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: D. MAPP

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	618.0					
	ML-SILT (FILL), little fine sand, little gravel, medium plasticity, light brown, moist, rootlets	616.5		1GP			
-2.5	ML-SILT, trace clay, trace gravel, medium to high plasticity, gray to light gray, moist to very moist - chemical odor @ 3.0ft BGS			2AGP			250 (3.5- 4ft)
-5.0	- very moist, crystalline chunks, amber in color, chemical odor @ 4.0 to 5.5ft BGS	612.5		2GP			900 (4- 4.5ft)
-7.5	ML-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, gray to light gray, moist, chemical odor - varving visible @ 6.5ft BGS			2BGP			120 (7.5- 8ft)
-10.0				3GP			
-12.5		605.0		3AGP			24 (12.5- 13ft)
	BOTTOM OF BOREHOLE @ 13.0ft. BGS						
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

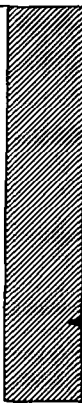
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-82)
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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP44A-01
DATE COMPLETED: FEBRUARY 3, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: D. MAPP

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	618.0					
-2.5	ML-SILT (FILL), some fine sand, some gravel (3/4"Ø), trace clay, medium plasticity, light brown, moist	617.3		1AGP			1.1 (0.8-2ft)
	ML-SILT, little fine sand, trace gravel, trace clay, light brown to brown, moist			1GP			
-5.0	- slightly more clay, rootlets, gray, moist, fractured horizontally and vertically @ 2.0ft BGS	613.5		1BGP			27 (4-4.5ft)
-7.5	- grading to silt and fine sand, trace gravel, moist @ 4.0ft BGS			2GP			
-10.0	ML-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, gray, moist			2AGP			0 (9.5-10ft)
	- slightly less clay, varving visible (horizontal) @ 9.5 to 10.0ft BGS	608.0					
	BOTTOM OF BOREHOLE @ 10.0ft. BGS						
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP45-01
DATE COMPLETED: FEBRUARY 3, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: D. MAPP

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	620.9					
-2.5	ML-SILT (FILL), trace clay, trace fine sand, trace gravel, rootlets, low plasticity, brown to light brown, oxidized	619.4		IGP			0 (2-4ft)
-5.0	ML-SILT, trace clay, fine sand, trace gravel, low to medium plasticity, brown	615.9		2AGP 2GP			1.0 (5-6ft)
-7.5	CL-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, gray, horizontally and vertically fractured						
-10.0	- slightly less clay @ 10.0 to 12.0ft BGS			3GP 3AGP			1.0 (10-12ft)
-12.5	BOTTOM OF BOREHOLE @ 12.0ft. BGS	608.9					
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
 WATER FOUND ▼ STATIC WATER LEVEL ▼
 CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP47-01
DATE COMPLETED: FEBRUARY 3, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: D. MAPP

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	620.6					
	ML-SILT (FILL), little fine sand, trace gravel, rootlets, low plasticity, brown to dark brown, moist	620.3					
2.5	ML-SILT, trace clay, little fine sand, trace gravel, medium plasticity, light brown to beige, moist, oxidation platlets, fractured horizontally and vertically			IGP			
				1AGP			4.1 (3.5-4ft)
5.0	- slightly larger grained sand @ 3.5ft BGS - slightly more clay, gray, mild varving (horizontal) @ 4.0ft BGS	614.6		2AGP			7.6 (5-6ft)
7.5	ML-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, low plasticity, gray, varving visible - slightly more clay @ 8.0ft BGS			2GP			
10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	610.6		2BGP			0 (8.5-10ft)
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

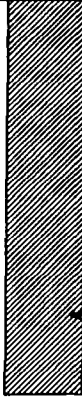
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP48-01
DATE COMPLETED: FEBRUARY 3, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: D. MAPP

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	620.6					
	ML-SILT (FILL), little sand, trace gravel, trace clay, low to medium plasticity, light brown, moist	619.6		1GP			
-2.5	ML-SILT, trace clay, little fine sand, trace gravel, rootlets, low to medium plasticity, light brown to beige, moist, presence of oxidation	617.6		1BGP			0.3 (2.5-3ft)
-5.0	SM-SAND, some silt, trace clay, trace gravel, trace rootlets, low plasticity, gray to dark gray	615.1		2GP			0.4 (4.5-5ft)
-7.5	ML-CLAYEY SILT (LACUSTRINE), little fine sand, trace gravel, gray, moist, varving visible			2AGP			
-10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	610.6					0 (9.5-10ft)
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
CHEMICAL ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP49-01
DATE COMPLETED: FEBRUARY 3, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	P1D (ppm)
	GROUND SURFACE	625.5					
-2.5	ML-SILT (FILL), trace fine sand, trace gravel, rootlets, low plasticity, gray-brown, moist			1GP			0.3 (3-5ft)
-5.0				1AGP			
-7.5	ML-SILT, little fine sand, trace gravel, rootlets, gray to light brown, moist, slight chemical odor - trace fine sand, trace gravel, light brown to beige, slight chemical odor, moist, horizontal and vertical fractures @ 9.0ft BGS	617.5		2GP			1.8 (9-10ft)
-10.0				2AGP			
-12.5	ML-CLAYEY SILT (LACUSTRINE), trace gravel, low plasticity, gray to light gray, moist	612.5		3GP			2.4 (12.5-15ft)
-15.0				3AGP 3BGP			
	BOTTOM OF BOREHOLE @ 15.0ft. BGS	610.5					
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP51-01
DATE COMPLETED: FEBRUARY 3, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: D. MAPP

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	633.3					
	ML-SILT (TOPSOIL), trace fine grained sand, trace gravel, rootlets, medium plasticity, dark brown, moist	632.9		1GP			
-2.5	ML-SILT, little fine sand, trace gravel, low plasticity, light brown to red brown, mild oxidation, moist, varving visible (horizontal)			1AGP			2.9 (4-5ft)
-5.0	- increase in clay, medium to high plasticity @ 4.0ft BGS - increase in clay, high plasticity @ 6.0ft BGS			2AGP 2GP			22 (7.5-7.7ft)
-7.5	ML-SILT, little fine sand, trace clay, trace gravel, low plasticity, light brown to medium brown, mild varving (horizontal), few vertical fractures	626.1					
-10.0	- some clay, high plasticity, brown @ 11.7ft BGS			3GP 3AGP 3BGP			12.1 (11.7-12.3ft) 1.2 (13-13.5ft)
-12.5	CL-CLAYEY SILT, little fine sand, trace gravel, medium plasticity, moist	621.0					
-15.0	- less clay, varving visible (horizontal), low plasticity @ 15.5ft BGS			4GP			0 (18-20ft)
-17.5				4AGP			
-20.0	- slightly more clay, medium plasticity @ 20.6ft BGS			5GP			
-22.5				5AGP			0 (22.5-23.5ft)
-25.0	BOTTOM OF BOREHOLE @ 23.5ft. BGS	609.8					
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ∇ STATIC WATER LEVEL ∇
CHEMICAL ANALYSIS \bigcirc

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP52-01
DATE COMPLETED: FEBRUARY 4, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	633.0					
	ML-SANDY SILT (TOPSOIL), trace clay and gravel, few rootlets, dark brown, moist	632.0					
-2.5	ML-SANDY SILT, trace clay and gravel, low plasticity, brown, moist, varving visible			1GP			
-5.0				1AGP			0 (3-5ft)
-7.5				2GP			0 (6-8.5ft)
	ML-CLAYEY SILT, trace gravel and fine sand, medium plasticity, gray, moist	624.5		2AGP			
-10.0				2BGP			0 (8-10ft)
-12.5	ML-SANDY SILT, some clay, trace gravel, low plasticity, brown, moist	621.0		3GP			0 (10-12ft)
				3AGP			0 (12-14ft)
-15.0	ML-SANDY SILT (LACUSTRINE), trace clay and gravel, low plasticity, gray, moist	618.0		3BGP			
-17.5				4GP			0 (17-19ft)
				4AGP			
-20.0	BOTTOM OF BOREHOLE @ 20.0ft. BGS	613.0		4BGP			0 (19-20ft)
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP53-01
DATE COMPLETED: FEBRUARY 4, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	632.0					
-2.5	ML-SANDY SILT (TOPSOIL), trace clay and gravel, presence of rootlets, dark brown, moist	631.0		1GP			
-5.0	ML-SANDY SILT, trace clay and gravel, low plasticity, brown, moist			1AGP			0.2 (3-5ft)
-7.5	- becoming medium plasticity, wet @ 7.0ft BGS			2GP			0 (6-8ft)
-10.0	CL-SILTY CLAY, trace sand, high plasticity, gray with pinkish veins	623.0		2AGP 2BGP			0 (8-9ft)
-12.5				3GP 3AGP			0 (11-13ft)
-15.0	ML-SANDY SILT (LACUSTRINE), some clay, trace gravel, low plasticity, gray, moist	618.0		3BGP			0 (14-15ft)
-17.5				4GP			
-20.0		612.0		4AGP			0 (18-20ft)
-22.5	BOTTOM OF BOREHOLE @ 20.0ft. BGS						
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ☒ STATIC WATER LEVEL ☒
CHEMICAL ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP54-01
DATE COMPLETED: FEBRUARY 4, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	"N" VALUE	PID (ppm)
	GROUND SURFACE	621.6					
-2.5	ML-SANDY SILT, trace clay and gravel, low plasticity, brown, moist to wet, varving visible between 2.0 and 3.0ft BGS			1GP			
-5.0	- poor recovery @ 3.0 to 5.0ft BGS	618.6		1AGP			0 (3-5ft)
-7.5	ML-SANDY SILT, some clay, trace gravel, low plasticity, gray, moist, varving visible			2AGP			2 (5-7ft)
-10.0				2GP			
-12.5				2BGP			0 (9-10ft)
-15.0				3GP			0 (11-13ft)
-17.5				3AGP			
-20.0				3BGP			0 (14-15ft)
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ↓ STATIC WATER LEVEL ↓
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP55-01
DATE COMPLETED: FEBRUARY 4, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	621.8					
-2.5	ML-SANDY SILT, some clay, trace gravel, medium plasticity, brown, wet	619.3		1GP			1 (3-4ft)
-5.0	- becoming gray/brown and moist @ 4.5ft BGS ML-SANDY SILT (LACUSTRINE), some clay, trace gravel, low plasticity, moist to dry, varving visible, no odor			1AGP			1 (4-5ft)
-7.5				1BGP			3 (5.5-7ft)
-10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	611.8		2AGP			0 (8-10ft)
-12.5				2GP			
-15.0				2BGP			
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP56-01
DATE COMPLETED: FEBRUARY 4, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	622.6					
-2.5	ML-SANDY SILT, some clay, trace gravel, low plasticity, brown, moist			1GP			
-5.0				1AGP			0 (3-5ft)
-7.5	ML-SANDY SILT, some clay, trace gravel, low plasticity, gray, moist, varving visible	616.6		2AGP			1 (5-6ft)
-10.0				2BGP 2GP			4 (6.5-8ft)
-12.5	- becoming wet @ 10.0ft. BGS			2CGP			1 (9-10ft)
-15.0				3GP 3AGP			0.3 (11-13ft)
-17.5	BOTTOM OF BOREHOLE @ 15.0ft. BGS	607.6					
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

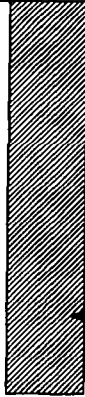
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP57-01
DATE COMPLETED: FEBRUARY 4, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	622.9					
-2.5	ML-SANDY SILT (FILL), some clay, trace gravel, low plasticity, brown, moist, varving visible from surface			1GP			
-5.0	- compressed topsoil layers with roots @ 3.0ft. BGS ML-SANDY SILT, some clay, trace gravel, low plasticity, brown, moist	619.9 617.9		1AGP			0 (3-5ft)
-7.5	ML-SANDY SILT (LACUSTRINE), some clay, trace gravel, low plasticity, gray, varving visible, no odor			2GP 2AGP 2BGP			0 (5-7ft) 0 (7.5-9.5ft)
-10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	612.9					
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP58-01
DATE COMPLETED: FEBRUARY 4, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	622.1					
-2.5	ML-SANDY SILT (FILL), some clay, trace gravel, low plasticity, brown, moist, varving visible to 4.0ft BGS			1GP			
-5.0	- compressed topsoil with rootlets @ 4.0ft BGS ML-SANDY SILT, some clay, trace gravel, low plasticity, brown to gray, moist - gray, varving visible @ 5.5 at 12.5ft BGS	618.1	2" Ø BOREHOLE	1AGP 2BGP			0 (3-4ft) 0 (4-5ft) 0 (5.5-7ft)
-7.5			BENTONITE GROUT	2GP			
-10.0	- becoming wet @ 10.0ft BGS			2BGP			0 (9-10ft)
-12.5	BOTTOM OF BOREHOLE @ 12.5ft. BGS	609.6		3GP 3AGP			0 (11-12ft)
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							


NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

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PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP59-01
DATE COMPLETED: FEBRUARY 4, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	622.1					
-2.5	ML-SANDY SILT, trace clay, trace gravel, low plasticity, brown, moist, varving visible			1GP			
-5.0				1AGP			0 (4-5ft)
-7.5	ML-SANDY SILT (LACUSTRINE), some clay, trace gravel, low plasticity, gray, moist, varving visible	616.6		2AGP			0 (5.5-7ft)
-10.0				2GP			
				2BGP			0 (8-10ft)
-10.0	BOTTOM OF BOREHOLE @ 10.0ft. BGS	612.1					
-12.5							
-15.0							
-17.5							
-20.0							
-22.5							
-25.0							
-27.5							
-30.0							
-32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(WL-95)
Page 1 of 1

PROJECT NAME: FIELDS BROOK SUPERFUND SITE
PROJECT NUMBER: 11676
CLIENT: FIELDS BROOK ACTION GROUP
LOCATION: ASHTABULA, OHIO

HOLE DESIGNATION: GP60-01
DATE COMPLETED: FEBRUARY 4, 2001
DRILLING METHOD: GEOPROBE
CRA SUPERVISOR: L. PAQUETTE

DEPTH ft. BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft. AMSL	MONITOR INSTALLATION	SAMPLE			
				NUMBER	STATE	'N' VALUE	PID (ppm)
	GROUND SURFACE	622.3					
2.5	ML-SANDY SILT, trace clay and gravel, low plasticity, brown, moist, varving visible from surface		2" Ø BOREHOLE	1GP	X		
5.0				1AGP	X		0 (3-5ft)
7.5	ML-SANDY SILT (LACUSTRINE), some clay, trace gravel, low plasticity, gray, moist, varving visible	615.8	BENTONITE GROUT	2AGP	X		0.5 (5-6.5ft)
10.0				2GP	X		
12.5				2BGP	X		0.3 (8-10ft)
15.0	BOTTOM OF BOREHOLE @ 15.0ft. BGS	607.3		3GP	X		0.1 (12-14ft)
17.5				3AGP	X		
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE
WATER FOUND ▼ STATIC WATER LEVEL ▼
CHEMICAL ANALYSIS ○

DEPTH (Ft)	SAMPL NO.	TYPE	P.P. B/Ft	REC	DESCRIPTION OF STRATIGRAPHY	OVA READINGS
—	1	SS	2.0		Very stiff, wet, brown, silty CLAY (CL)	OVA=BG
5					UNIFIED SOIL CLASSIFICATION SYSTEM	
—	2	NX	5.0		Gray SHALE	RQD=25%

SAMPLE NUMBER —
 SAMPLE TYPE (SEE BELOW) —
 POCKET PENETROMETER READING IN TONS/SQ. FT. —
 BLOWS PER FOOT TO DRIVE SPLIT-SPOON WITH 140-LB. HAMMER (ASTM D-1586) —
 RECOVERY IN FEET —

OVA ORGANIC VAPOR ANALYZER READINGS IN PPMV —
 BG BACKGROUND —
 RQD ROCK QUALITY DESIGNATION —

SAMPLE IDENTIFICATION

CS ← 4 INCH I.D. CONTINUOUS SAMPLER
 SS ← 2 INCH O.D. SPLIT-SPOON SAMPLER
 NX ← NX ROCK CORING METHOD (1.875-INCH DIAMETER CORE)
 NQ ← NQ ROCK CORING METHOD (2.125-INCH DIAMETER CORE)

MONITORING WELL KEY

4" PROTECTIVE STEEL CASING WITH LOCKING CAP (NOT SHOWN)
 10" (DEEP) OR 6" (SHALLOW) DIAMETER BOREHOLE
 2" DIAMETER SCH. 40 PVC. RISER PIPE
 CEMENT-BENTONITE GROUT BACKFILL
 BENTONITE SEAL
 2" DIAMETER SCH. 40 PVC. WELL SCREEN (0.010 SLOTTED)
 SAND PACK
 END PLUG

KEY TO LOGS OF BORINGS
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: WEC	DATE: 14 JAN. 1991	PROJECT No.: 86C3609D-230	FIGURE No.: 2
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Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 636.99 GROUND ELEVATION: 634.49	LOCATION: Occidental Chemical Company DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME HT75					DATE DRILLED: 23 July 1990 INSPECTOR: S. Basham	
	DEPTH (Ft)	SAMPL NO.	TYPE	B./FT.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	1	SS	4	1.8	Soft, moist to wet, orange-brown Silty SAND (SM)	Lacustrine	
	2	SS	10	2.0	Soft, moist, gray w/ orange mottling Silty CLAY (CL)		
	5	SS	7	2.2	Stiff, moist, gray with orange mottling Silty CLAY		
	4	SS	8	2.2	Firm, moist, light brown CLAY (CL); trace gray and black sand		
	5	SS	10	2.2	Firm, moist, lt brown w/ trace orng mottling CLAY; trace black sand, gravel, & iron-stained partings ...heavier iron staining		
	6	SS	8	2.0			
	7	SS	14	2.2			
	15	SS	13	1.9	Stiff, wet light brown with iron staining Sandy CLAY (CL)		
	9	SS	9	2.0	Stiff, moist, gray CLAY (CL); trace fine gravel		
	10	SS	9	2.2	...shale fragments		
	11	SS	10	2.2			
	12	SS	13	2.2	Stiff, moist to wet gray CLAY (CL); trace to no fine gravel		
	25	SS	11	1.4			Lacustrine
	14	SS	20	1.7	Stiff, wet, gray Silty CLAY (CL-ML)	Till	
	15	SS	17	1.4	Very stiff, wet, gray Silty CLAY		
	16	SS	8	2.2	Firm, moist to wet, gray Silty CLAY		
	17	SS	4	2.2	Soft, wet, gray with black laminae Silty CLAY		
	18	SS	7	2.0	Firm, wet, gray, Silty CLAY		
	19	SS	7	2.2	...fine sand lense		
40				Firm, moist, gray CLAY (CL) Firm, moist, gray CLAY; trace gravel (no sample recovered due to driller error)			

LOG OF BORING FBMW-2D
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 3
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Woodward-Clyde Consultants

Page 2 of 2

DEPTH (Ft)	SAMPL NO.	TYPE	B/Ft	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
20	SS	10	2.2		Stiff, moist, gray CLAY; trace gravel	
21	SS	9	2.2			
45	22	SS	16	1.8		
23	SS	24	1.6			
24	SS	23	1.6		Very stiff, moist, gray CLAY; some fine to medium grained gravel	
50	25	SS	>68	1.4		Till
26	NQ		3.0		Gray SHALE (51.5 ft.) Highly weathered, thin bedded.	BEDROCK
55						
27	NQ		4.4			
60						
					End of boring at 60.5 feet. Water encountered at 13.5 feet.	
65						
70						
75						
80						
85						

LOG OF BORING FBMW-2D

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL

DATE: 1 NOV 1990

PROJECT No.: 86C3609D-230

FIGURE No.: 3

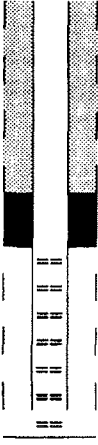
Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 638.81 ft.		LOCATION: Vicinity of Reach 11 DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 850				DATE DRILLED: 12, 13 June 1990 INSPECTOR: S. Shubat			
GROUND ELEVATION: 635.61		DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS	
		1	CS	4.5	4.4		Hard, moist, dk bwn CLAY (CL); trace sand	Lacustrine	
							Hard, moist, light brown, iron stained, gray mottled	OVA=BG	
							Silty CLAY (CL); some gravel, trace		
							organic material		
		5	2	CS	4.5	5.0		...increased iron staining	OVA=BG
		10	3	CS	4.0	4.5		Moist, gray and tan mottled, fine SAND and SILT (ML)	OVA=BG
		15	4	CS		5.0		Moist, gray, fine SAND and SILT; clay content increasing with depth	OVA=BG
						Moist, interbedded gray CLAY (CL) and gray fine SAND (SM)			
						Moist gray CLAY (CL); lenses of fine sand			
20	5	CS		5.0		Wet, gray w/ iron staining, SILT & fine SAND (SM)	Lacustrine		
						Moist, gray Silty CLAY (CL-ML); lenses of fine sand and silt	OVA=BG		
							Till		
25	6	CS		5.0		Moist, gray Silty CLAY (CL-ML); lenses of fine sand, silt, and iron staining	OVA=BG		
30	7	CS	4.5	5.0		Hard, moist, gray, Silty CLAY; with fine gravel	OVA=BG		
						Hard, moist, gray, Silty CLAY; trace coarse sand			
35	8	CS	4.5	5.0			OVA=BG		
40	9	CS	4.5	5.0			OVA=BG		


27'
 fill

LOG OF BORING FBW-3D FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO			
CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 4

Woodward-Clyde Consultants

Page 2 of 2		DEPTH (Ft)	SAMPL NO.	TYPE	P.P	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	45	10	CS	4.5	5.0		Hard, moist, gray, Silty CLAY (ML-CL); trace coarse sand	OVA=BG
	50	11	CS	5.0	5.0		Gray SHALE (48.3 ft.) Fractured, unweathered (upper 2-inches weathered), thin bedded	Till Bedrock
	55	12	CS	2.0	2.0			
	60						End of boring at 56.0 feet. Water encountered during drilling at 19 feet.	
	65							
	70							
	75							
	80							
	85							
LOG OF BORING FBW-3D								
FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO								
CHECKED BY: JCL			DATE: 1 NOV 1990			PROJECT No.: 86C3609D-230		
						FIGURE No.: 4		

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 637.69 ft. GROUND ELEVATION: 635.61 	LOCATION: Vicinity of Reach 11 DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 850					DATE DRILLED: 13 June 1990 INSPECTOR: S. Shubat
DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
5					See log of FBW-3D for description of stratigraphy.	
10						
15						
20						
25						
30						
35						
40						

LOG OF BORING FBW-3S
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

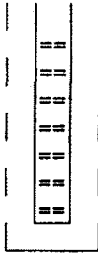
CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 5
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Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 633.82 ft. GROUND ELEVATION: 630.92	LOCATION: Vicinity of Reach 11 DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 850					DATE DRILLED: 1-3 June 1990 INSPECTOR: S. Shubat	
	DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	1	CS	3.5	4.0	Very stiff, moist to dry, brown Clayey SILT (ML); some gravel	Fill OVA=BG	
	5	2	CS	3.5	5.0	Very stiff, moist to dry, brown, mottled w/ gray & iron staining Clayey SILT (ML); some gravel	Fill
	10	3	CS	3.5	5.0	Very stiff, moist, dark brown mottled with iron stain Silty CLAY (CL); with roots, trace fine to coarse sand	Lacustrine OVA=BG
	15	4	CS	4.5	5.0	Very stiff, moist to dry, brown Silty CLAY grading to CLAY (CL); trace iron-stained lenses, some fine sand lenses	OVA=BG Lacustrine
	20	5	CS	4.5	5.0	Hard, moist to dry, gray Silty CLAY (CL-ML); trace coarse sand	Till OVA=BG
	25	6	CS	4.5	5.0	Hard, moist to dry, gray Silty CLAY; trace medium to coarse sand, trace cobbles	OVA=70
	30	7	CS	4.5	5.0	Hard, dry, gray Silty CLAY; trace medium to coarse sand	
	35	8	CS	4.5	5.0	Hard, dry, gray Sandy Silty CLAY; trace cobbles	
	40	9	CS			Hard, moist/wet, gray Silty CLAY; some coarse sand	Till
LOG OF BORING FBW-4D FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO							
CHECKED BY: JCL		DATE: 1 NOV 1990		PROJECT No.: 86C3609D-230		FIGURE No.: 6	

Woodward-Clyde Consultants

Page 2 of 2

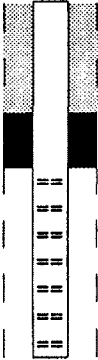


DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
40					Gray SHALE (40.2 ft.) Weathered, thin bedded	Bedrock
45	10	CS			Unweathered, thin bedded, gray SHALE	
50					End of boring at 48.8 feet Water encountered during drilling at 40 feet.	
55						
60						
65						
70						
75						
80						
85						

LOG OF BORING FBW-4D
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 6
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ELEVATION TOP OF RISER PIPE: 632.89 ft. GROUND ELEVATION: 630.92 	LOCATION: Vicinity of Reach 11 DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 850					DATE DRILLED: 3 June 1990 INSPECTOR: S. Shubat	
	DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
5						See log of FBW-4D for description of stratigraphy.	
10							
15							
20							
25							
30							
35							
40							
LOG OF BORING FBW-4S FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO							
CHECKED BY: JCL		DATE: 1 NOV 1990		PROJECT No.: 86C3609D-230		FIGURE No.: 7	

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 631.66		LOCATION: Vicinity of Reach 11 DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 850				DATE DRILLED: 16,17 June 1990 INSPECTOR: S. Shubat		
GROUND ELEVATION: 629.16		DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
		1	CS	3.5	3.5	Very stiff, moist, brown & gray mottled, Silty CLAY (CL); trace roots	Lacustrine OVA=BG	
		5	2	CS	4.5	4.6	Wet, brown, fine SAND and SILT (SW-SM) Hard, moist, gray with brown mottling, Silty CLAY (CL); trace thin, fine sand lenses	OVA=BG
		10	3	CS	4.5	5.0	Hard, dry, gray with brown mottling, Silty CLAY; trace thin, fine sand lenses	Lacustrine
		15	4	CS	4.5	3.8	Hard, dry, gray Silty CLAY (CL-ML); silt content increases with depth <i>no comment</i>	Till OVA=BG
		20	5	CS	4.5	5.0	Hard, dry, gray Silty CLAY; some coarse sand, trace fine gravel, granite cobble	OVA=0.5
		25	6	CS	4.5	5.0		OVA=BG
		30	7	CS	4.5	5.0		OVA=BG
		35	8	CS	4.5	5.0	Gray SHALE (31.9 ft.) Weathered, fractured, thin bedded	Till Bedrock
		40	9	CS	4.5	2.5	Slightly weathered, fractured, thin bedded, gray SHALE	

LOG OF BORING FBW-5D
FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 8
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Page 2 of 2

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DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
					Gray SHALE	
					Slightly weathered, fractured, thin bedded	
					End of boring at 42.5 feet.	
45						
50						
55						
60						
65						
70						
75						
80						
85						

LOG OF BORING FBW-5D

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

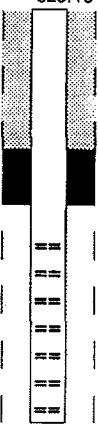
CHECKED BY: JCL

DATE: 1 NOV 1990

PROJECT No.: 86C3609D-230

FIGURE No.: 8

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 631.76 GROUND ELEVATION: 629.16 	LOCATION: Vicinity of Reach 11 DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 850					DATE DRILLED: 20 June 1990 INSPECTOR: S. Shubat
DEPTH (Ft)	SMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
—					See log of FBW-5D for description of stratigraphy.	
—						
—						
5						
—						
—						
10						
—						
—						
15						
—						
—						
20						
—						
25						
—						
30						
—						
35						
—						
40						

LOG OF BORING FBW-5S
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 9
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Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 640.55		LOCATION: RMI Metals DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 2 June 1990 INSPECTOR: S. Basham	
GROUND ELEVATION: 637.85		DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	1	CS	4.5	3.1	Hard, moist, brown Silty CLAY (CL); org. mat.	Fill		
	2	CS		3.8	Loose, moist, black fine to medium SAND with silt (SW-SM); FILL	OVA=BG		
	5				...broken glass	OVA=5.5 ppm		
					...broken glass			
	3	CS		3.7	...7-inch decomposed brick layer			
	10				...some medium to large gravel			
	4	CS		4.7	Very soft, moist to wet, grn-black CLAY (CL)	OVA=280 ppm; Fill		
			4.5		Stiff, moist, gray w/ tan mottling, Silty CLAY (CL-ML)	Till		
	15				Hard, moist, orng-brwn Silty CLAY; trace gravel			
					Hard, moist/dry, gray Silty CLAY; trace sand lenses	OVA=6 ppm		
					Hard, moist to dry, gray Silty CLAY; some gravel			
	5	CS	4.5	5.0	...5-inch medium gray clay layer			
20			1.5					
			4.5					
25								
	CS		3.7	Gray SHALE (20.3 ft.)	Bedrock			
					Hard, moderately weathered, thin bedded			
					Hard, slightly weathered, thin bedded, gray SHALE			
					(sample lost in boring; boring completed without sampler in augers)			
30								
	CS		0.0					
35								
					End of boring at 33 feet.			
40								

LOG OF BORING FBW-7D

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO


CHECKED BY: JCL

DATE: 1 NOV 1990

PROJECT No.: 86C3609D-230

FIGURE No.: 10

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 640.18 GROUND ELEVATION: 637.85 	LOCATION: RMI Metals DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 4 June 1990 INSPECTOR: S. Basham
DEPTH (Ft)	SMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
—					See log of FBW-7D for description of stratigraphy.	
—						
—						
5						
—						
—						
10						
—						
—						
15						
—						
—						
20						
—						
—						
25						
—						
—						
30						
—						
—						
35						
—						
—						
40						

LOG OF BORING FBW-7S
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 11
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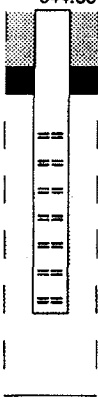
Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 646.98 GROUND ELEVATION: 644.38 	LOCATION: RMI Metals DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 30 May 1990 INSPECTOR: S. Basham, S. Shubat	
	DEPTH (Ft)	SMPLE NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
—	1	CS		3.8	Dry to moist, brown CLAY (CL); with roots	Fill	
—					Loose, moist, blk, med. to fine SAND (SM) Fill	OVA=BG	
—					Firm, moist, med. gray with rust colored mottling	Lacustrine	
5	2	CS	2.2	4.8	Silty CLAY (CL); trace poorly sorted gravel		
—					Very stiff, moist, medium gray with rust-colored mottling, CLAY (CL);		
—						Lacustrine	
10	3	CS	4.5	5.0	Hard, dry to moist, gray and brown mottled Silty CLAY (CL); trace coarse gravel	Till	
—					Hard, dry/moist, gray Silty CLAY; trace c. gravel	OVA=BG	
—					...oxidized fracture	OVA=BG	
15	4	CS	4.5	5.0	...oxidized fracture		
—						OVA=BG	
20	5	CS	4.5	5.0		OVA=BG	
—							
25	6	CS	4.5	5.0			
—						Till	
30	7	CS	4.5	5.0	Gray SHALE (26.4 ft.) Highly weathered, soft, thin bedded	Bedrock	
—					Moderately weathered, soft, thin bedded, gray SHALE		
35	8	CS	4.5	1.8			
—					End of boring at 35.4 feet.		
40							

LOG OF BORING FBMW-8D
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 12
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Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 647.13 GROUND ELEVATION: 644.38 	LOCATION: RMI Metals DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 31 May - 1 June 1990 INSPECTOR: S. Basham	
	DEPTH (Ft)	SMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	—					See log of FBW-8D for description of stratigraphy.	
	—						
	—						
	5						
	—						
	—						
	—						
	10						
	—						
	—						
	15						
	—						
	—						
	20						
	—						
	—						
	25						
	—						
	—						
	30						
	—						
	—						
	35						
	—						
	—						
	40						

LOG OF BORING FBW-8S
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 13
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Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 637.91 ft.		LOCATION: Detrex DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750				DATE DRILLED: 22, 23 May 1990 INSPECTOR: N. Bigman			
GROUND ELEVATION: 635.41		DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS	
		—	1	CS		3.8	Stiff, moist, dark gray with brown mottling, Silty CLAY (CL); trace to few sand and gravel	Lacustrine	
		—					Very stiff, dry to moist, light gray and brown mottled CLAY (CL); trace sand		
		5	2	CS		5.0	Hard, dry to moist, light gray and brown mottled CLAY; trace sand and gravel		
		—							
		—							
		10	3	CS		5.0	Hard, dry to moist, light brown CLAY; trace sand and gravel		
		—					Hard, dry to moist, gray CLAY; trace coarse sand and fine gravel		
		15	4	CS		5.0	Dry to moist varves of fine gray Silty SAND (SM) and gray SILT (ML)		
		—							
—						Very stiff, dry to moist, gray CLAY (CL); some fine sand partings	Lacustrine		
20	5	CS		5.0	Hard, moist, gray with trace red mottling, Silty CLAY (CL-ML); trace sand and gravel	Till			
—									
25	6	CS		5.0	...dark gray, coarse, angular, shale gravel				
—									
—									
30	7	CS		5.0	Hard, moist, gray Silty CLAY; few gravel	OVA = 90 ppm			
—					...1-inch gray, medium sand layer				
—									
35	8	CS		5.0	Hard, moist to dry, gray Silty CLAY; few gravel	OVA = 390 ppm			
—									
—									
40	9	CS		5.0					

LOG OF BORING FBW-11D
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 14
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Woodward-Clyde Consultants

DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
45	10	CS		5.0	Hard, dry to moist gray Silty CLAY (CL-ML); few gravel	
50	11	CS		4.5	Gray SHALE (45.2 ft.) Slightly weathered, thin bedded, moderately hard, fractured	Till Bedrock RQD = 53%
55					Unweathered to slightly weathered, thin bedded moderately hard, fractured, gray SHALE	RQD = 74%
60					End of boring at 53.5 feet. Water found in sampler at 9 and 14 feet.	
65						
70						
75						
80						
85						

LOG OF BORING FBW-11D

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

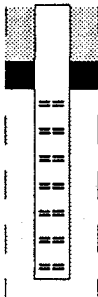
CHECKED BY: JCL

DATE: 1 NOV 1990

PROJECT No.: 86C3609D-230

FIGURE No.: 14

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 637.91 GROUND ELEVATION: 635.41 	LOCATION: Detrex DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 24 May 1990 INSPECTOR: N. Bigman	
	DEPTH (Ft)	SMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	—					See log of FBW-11D for description of stratigraphy.	
	—						
	—						
	5						
	—						
	—						
	—						
	10						
	—						
	—						
	15						
	—						
	—						
	20						
	—						
	—						
	25						
	—						
	—						
	30						
	—						
	—						
	35						
	—						
	—						
	40						

LOG OF BORING FBW-11S

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 15
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Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 636.53 ft.		LOCATION: Detrex DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750				DATE DRILLED: 5,6 June 1990 INSPECTOR: S. Basham, N. Bigman		
GROUND ELEVATION: 633.63		DEPTH (Ft)	SMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
		—	1	CS	4.5	4.0	Very soft, moist, brn CLAY (CL); roots, trace sand	Lacustrine
		—					Hard, moist, gray and brown mottled CLAY (CL); trace sand ...becomes hard, moist to dry, brown with gray mottling	
		5	2	CS	3.0	4.8		Very stiff, dry to moist, brown with gray mottling Silty CLAY (CL); varved with numerous silt partings
		—			4.0			
		—						
		10	3	CS		5.0	...4-inch orange-brown silt layer	Hard, dry/moist, gray Silty CLAY; 5 inches of silt and sand interbeds
		—			4.2		...2-inch gray fine sand layer	
		—						
		15	4	CS		4.6	Stiff, moist, gray with trace red mottling CLAY (CL);	5-inch sand pocket; planar partings on 1/4-inch scale
		—			2.5			
		—						
		20	5	CS	2.2	5.2	Very stiff, dry to moist gray Silty CLAY (CL-ML);	Till
		—					trace sand and gravel	
		—						
		25	6	CS		4.6	...planar partings oriented 0-30°, one fine sand parting	Very stiff, dry to moist gray Silty CLAY; trace sand and coarse gravel
		—						
30	7	CS	4.5	5.0	Hard, dry to moist gray Silty CLAY;	trace sand and coarse gravel		
—								
—								
35	8	CS	4.5	4.7		Hard, dry to moist gray Silty CLAY; trace sand and few coarse gravel		
—								
—								
40	9	CS		5.3				

LOG OF BORING FBMW-12D
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 16
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Woodward-Clyde Consultants

DEPTH (Ft)	SAMPL NO.	TYPE	B/FI	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
					Very stiff, dry to moist, gray Silty CLAY (CL-ML)	Till
					Gray SHALE (41.1 ft.)	Bedrock
					Soft, highly weathered, thin bedded	RQD=60%
45	10	CS		5.2	Weathered, moderately soft, thin bedded, gray SHALE	RQD=82%
50	11	CS		1.5	Mod. hard, slightly weath., thin bedded, gray SHALE	RQD=0%
					End of boring at 50.3 feet	
55						
60						
65						
70						
75						
80						
85						

LOG OF BORING FBW-12D

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO


CHECKED BY: JCL

DATE: 1 NOV 1990

PROJECT No.: 86C3609D-230

FIGURE No.: 16

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 636.10 ft. GROUND ELEVATION: 633.63 	LOCATION: Detrex DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 6 June 1990 INSPECTOR: S. Basham, N. Bigman
DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
—					See log of FBW-12D for description of stratigraphy.	
—						
—						
5						
—						
—						
—						
10						
—						
—						
15						
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20						
—						
—						
25						
—						
—						
30						
—						
—						
35						
—						
—						
40						

LOG OF BORING FBW-12S
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 17
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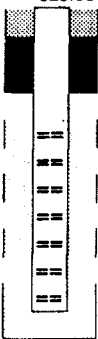
Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 628.45		LOCATION: Detrex DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 11 June 1990 INSPECTOR: N. Bigman		
GROUND ELEVATION: 625.95		DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS	
		1	CS	1.5	3.7		Stiff, moist, mottled gray and brown Sandy CLAY (CL); trace cinders, gravel, brick fragments organic material and black sand pockets	Fill	
		5	2	CS	2.0	4.3		Blk Sandy CLAY; trace cinder, grvl, sand, brick frags	Fill
								Interbedded brown and gray medium sand (SW); trace organic layers	Lacustrine
		10	3	CS	0.2	4.3		Firm, moist, black CLAY (CL); with organic material, trace roots ...3-inch gray clay layer Firm, moist, dark gray CLAY; trace organic mat. Firm, moist, black Sandy CLAY; w/ organic mat.	Lacustrine
		15	4	CS	4.2	5.0		Moist, gray, medium SAND (SW) Hard, moist, gray Silty CLAY (CL-ML); trace sand and fine to medium gravel	Till
		20	5	CS	4.5	5.0		Hard, moist, gray Silty CLAY (CL-ML); trace sand and fine gravel ...one 3-inch shale fragment. Hard, dry to moist gray Silty CLAY; trace sand and fine gravel	
		25	6	CS	4.5	5.0			
		30	7	CS	4.5	5.0			Till
		35	8	CS		4.6		Gray SHALE (31.0 ft.) Highly weathered, thinly bedded, blocky to fractured, soft Weathered, thinly bedded, blocky to fractured, soft ...6-inch very soft, highly weathered zone	Bedrock
		40	9	CS		1.6		...two 1-inch, very soft, highly weathered zones	End of boring at 40.1 ft.

LOG OF BORING FBW-13D
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 18
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Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 628.00 GROUND ELEVATION: 625.95 	LOCATION: Detrex DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 15 June 1990 INSPECTOR: N. Bigman
DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
—					See log of FBW-13D for description of stratigraphy.	
—						
—						
5						
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10						
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15						
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—						
20						
—						
25						
—						
30						
—						
35						
—						
40						

LOG OF BORING FBW-13S
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 19
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Woodward-Clyde Consultants


ELEVATION TOP OF RIGER PIPE: 642.90 GROUND ELEVATION: 639.90	LOCATION: Acme Scrap Metals DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750	DATE DRILLED: 16, 17 June 1990 INSPECTOR: S. Basham, N. Bigman
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DEPTH (Ft)	SMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
5	1	CS		3.6	Moist, brown SILT (ML); trace roots, some sand	Lacustrine
					Loose, moist, light brown, fine SAND	
					Stiff, moist to wet, mottled tan to rust CLAY (CL)	
5	2	CS		4.7	Wet, red-brown to tan SILT (ML)	Lacustrine
					Stiff, moist, red-brown to rust, Silty CLAY (ML-CL)	
					Loose, wet, brown, fine SAND and SILT (SW-SM)	
10	3	CS	4.5	4.5	Hard, moist, medium gray Silty CLAY (CL-ML); some poorly sorted shale gravel	Till
15	4	CS	4.5	4.5		
20	5	CS	4.5	4.0		
25	6	CS		5.0	...granite cobble	
30	7	CS		5.0	Hard, moist, medium gray Silty CLAY; trace sand, trace to few gravel	
35	8	CS		4.9	Gray SHALE (33.1 ft.) Very soft, highly weathered, blocky, thin bedded Weathered to highly weathered, very soft to soft, fractured to blocky, thin bedded, gray SHALE	Bedrock, RQD=0 RQD=35%
40	9	CS		3.5		RQD=57%

LOG OF BORING FBW-14D FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO			
CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 20

Woodward-Clyde Consultants

Page 2 of 2



DEPTH (Ft)	SAMPL NO.	TYPE	B/Ft	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
					Gray SHALE	
					Slightly weathered, moderately soft, fractured, thin bedded	
					End of boring at 42.5 feet	
45						
50						
55						
60						
65						
70						
75						
80						
85						

LOG OF BORING FBW-14D

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO


CHECKED BY: JCL

DATE: 1 NOV 1990

PROJECT No.: 86C3609D-230

FIGURE No.: 20

Woodward-Clyde Consultants

ELEVATION TOP OF RIBBER PIPE: 629.32 GROUND ELEVATION: 627.1 	LOCATION: SCM Plant 2 DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME HT75					DATE DRILLED: 17 July 1990 INSPECTOR: S. Basham	
	DEPTH (Ft)	SMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	—					See log of FBW-15D for description of stratigraphy.	
	—						
	—						
	5						
	—						
	—						
	—						
	10						
	—						
	—						
	15						
	—						
	—						
	20						
	—						
	—						
	25						
	—						
	—						
	30						
	—						
	—						
	35						
	—						
	—						
	40						

LOG OF BORING FBW-15S FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO			
CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 23

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 638.59 GROUND ELEVATION: 636.1	LOCATION: Elkem Metals DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 14 July 1990 INSPECTOR: B. Schmidt	
	DEPTH (Ft)	SAMPL NO.	TYPE	B/FT.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	1	SS	12	1.7	Stiff, moist, brown and tan CLAY (CL)	Lacustrine OVA=BG	
	2	SS	10	2.0	...becomes less silty with depth	OVA=BG	
5	3	SS	12	2.0		OVA=BG	
	4	SS	14	2.0	Stiff, moist, bwn&tan CLAY; vertical fractures and iron staining ...Stiff, moist, gray CLAY (CL)	OVA=BG	
	5	SS	11	2.0		OVA=BG	
10	6	SS	11	2.0		OVA=BG	
	7	SS	9	2.0	...12-inches with increased silt content Firm, moist, gray CLAY	OVA=BG	
15	8	SS	8	1.8		OVA=BG	
	9	SS	11	2.0	Stiff, moist, gray CLAY; with silt layers, some red staining	OVA=BG	
	10	SS	8	1.3	Firm, moist, gray CLAY; silt layers, trace gravel, some red staining	OVA=BG	
20	11	SS	14	2.0	Stiff, moist, gray CLAY; silt layers, trace gravel, some red staining	OVA=BG	
	12	SS	11	2.0	...iron nodule	OVA=BG	
25	13	SS	14	1.8	...gravel increases, staining decreases	OVA=BG	
	14	SS	8	2.0	Stiff, moist, gray CLAY; with coarse gravel, some red staining	OVA=BG Lacustrine	
30	15	SS	14	2.0	Stiff, moist to dry gray Silty CLAY (CL-ML); with shale fragments, trace angular gravel	Till OVA=100	
	16	SS	27	2.0	Very stiff, moist to dry gray Silty CLAY; with shale fragments, trace angular gravel	OVA=400	
	17	SS	29	1.0		OVA=360	
35	18	SS	40	2.0	Hard, moist to dry gray Silty CLAY; with shale fragments, trace angular gravel increasing with depth	OVA=670	
	19	SS	39	2.0		OVA=600	
40	20	SS	37	2.0		OVA=1000	
LOG OF BORING FBW-16D FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO							
CHECKED BY: JCL		DATE: 1 NOV 1990		PROJECT No.: 86C3609D-230		FIGURE No.: 24	

Woodward-Clyde Consultants

DEPTH (Ft)	SAMPL NO.	TYPE	B/Ft	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
21	SS	25	2.0			
22	SS	>120				
23	NX		1.5		Gray SHALE (43.6 ft.)	Bedrock
45					Thin bedded, with some highly weathered beds	RQD=0%
24	NX		5.0			RQD=7%, OVA=1000
50						RQD=0%
25	NX		0.6			
55					Bottom of boring at 53.0 feet.	
60						
65						
70						
75						
80						
85						

LOG OF BORING FBW-16D

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO


CHECKED BY: JCL

DATE: 1 NOV 1990

PROJECT No.: 86C3609D-230

FIGURE No.: 24

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 637.88 GROUND ELEVATION: 636.1 	LOCATION: Elkem Metals DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 16 July 1990 INSPECTOR: N. Bigman	
	DEPTH (Ft)	SMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	— — — 5 — — — 10 — — — 15 — — — 20 — — — 25 — — — 30 — — — 35 — — — 40					See log of FBW-16D for description of stratigraphy.	
LOG OF BORING FBW-16S FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO							
CHECKED BY: JCL		DATE: 1 NOV 1990		PROJECT No.: 86C3609D-230		FIGURE No.: 25	

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 640.33 GROUND ELEVATION: 637.63		LOCATION: Vygen DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750				DATE DRILLED: 27-29 June 1990 INSPECTOR: S. Shubat	
	DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	1	CS	1.5	3.4	Firm to stiff, moist, brown Silty CLAY (CL); trace roots and coarse sand	Fill	
	2	CS	3.7	4.6	Stiff, moist, brown w/ gray mottling, Silty CLAY; w/silt, trace roots	Fill	
	5				Very stiff, moist, brown with trace brown mottling and iron staining, CLAY (CL); some medium sand, increasing silt content with depth	Lacustrine	
	10	CS	2.5	4.8	Very stiff, moist, brown CLAY; w/silt, some sand	Lacustrine	
	15	CS	2.5	4.5	Very stiff, moist gray with iron stain mottling, Silty CLAY (CL-ML); some fine sand, trace medium sand	Till	
	20				No samples retrieved due to loss of sample in boring.		
	25	CS	2.5	5.0	Very stiff, moist, gray Silty CLAY (CL-ML); some fine sand		
	30	CS	4.5	1.9	Hard, dry, gray Silty CLAY (CL-ML); some fine sand, trace shale fragments		
	35	NX			Gray SHALE (32.4 ft.)	Till	
	40	NX			Unweathered, thin bedded, with white and black beds and pyrite flakes	Bedrock	
					Unweathered, thin bedded, with white and black beds, chert beds and pyrite flakes; deformed		


LOG OF BORING FBW-17D

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 26
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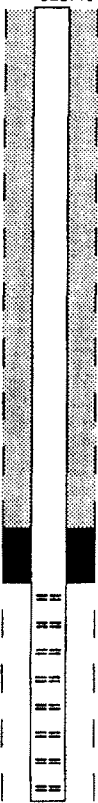
ELEVATION TOP OF RISER PIPE: 639.91 GROUND ELEVATION: 637.63	LOCATION: Vygen DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 29 June 1990 INSPECTOR: S. Shubat	
	DEPTH (Ft)	SMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
						See log of FBMW-17D for description of stratigraphy.	
5							
10							
15							
20							
25							
30							
35							
40							

LOG OF BORING FBMW-17S

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 27
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Woodward-Clyde Consultants

ELEVATION TOP OF RIGER PIPE: 630.99 GROUND ELEVATION: 628.49 	LOCATION: Vygen DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 20 June 1990 INSPECTOR: S. Shubat	
	DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
—	1	CS	2	4.0	Stiff, moist, brown to dark brown Sandy CLAY (CL); trace roots and vegetation near surface	Fill OVA=BG	
—			4.5		...6-inch sand and slag layer	Fill	
5	2	CS	4.5	5.0	Hard, dry to moist, gray, Silty CLAY (CL-ML); trace sand and gravel ...becomes dry	Till	
—					...1.5-inch shale fragment		
10	3	CS	4.5	5.0			
—					...2-inch spherical quartzite cobble		
15	4	CS	4.5	5.0		OVA=BG	
20	5	CS	4.5	3.0	Gray SHALE (20.3 ft.) Hard, blocky, slightly weathered, thin bedded	Till Bedrock	
—	6	CS		2.0	...12-inch soft zone		
25	7	CS		5.0	...6-inch soft zone		
30	8	CS		1.0	End of boring at 30 feet		
35							
40							

LOG OF BORING FBW-18D
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 28
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Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 630.48 GROUND ELEVATION: 628.49	LOCATION: Vygen DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 26 June 1990 INSPECTOR: S. Shubat	
	DEPTH (Ft)	SMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	—					See log of FBW-18D for description of stratigraphy.	
	—						
	—						
	5						
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	10						
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	15						
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	20						
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	25						
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	30						
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	35						
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	40						

LOG OF BORING FBW-18S
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 29
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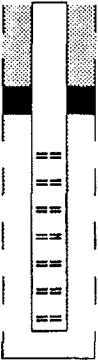
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ELEVATION TOP OF RISER PIPE: 645.60		LOCATION: SCM Plant 2 DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750				DATE DRILLED: 14 July 1990 INSPECTOR: S. Basham				
GROUND ELEVATION: 643.1		DEPTH (Ft)	SAMPL NO.	TYPE	B/FT.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS		
		1	SS	8	2.0		Loose, orange Silty SAND (SM)	Fill		
		2	SS	12	2.2		Loose, brown Silty SAND; trace gravel Loose, orng w/red-orng stain Silty SAND; trace grvl ...3-inch black sand lense			
		5	3	SS	6	2.0	Loose, moist, orange-brown Silty SAND Loose, wet, orange-brown Silty SAND			
				4	SS	4	2.0	Very loose, wet, orange-brown Silty SAND	Fill	
				5	SS	7	1.6	Firm, moist, gray CLAY (CL); trace gravel; increases to some gravel with depth	Lacustrine	
				10	6	SS	11	2.2		OVA=5
				7	SS	9	1.8		OVA=25	
				15	8	SS	8	1.9		OVA=25 Lacustrine
				9	SS	22	2.1	Very stiff, moist to dry, gray Silty CLAY (CL-ML); some fine to medium gravel	Till	
				10	SS	40	2.2	...3-inch thick shale cobble	OVA=20 OVA=70	
				20	11	SS	30	2.2		OVA=5
				12	SS	22	1.9			
				25	13	SS	27	2.2		
				14	SS	>88	1.7			
				15	NX		1.5	Gray SHALE (28.0 ft.) Weathered, thin bedded	Till Bedrock	
				30	16	NX		4.7	Unweathered, thin bedded, gray SHALE	
				35	17	NX		1.5		
		40					End of boring at 36.8 feet. Water encountered at 4.9 feet.			

LOG OF BORING FBW-19D
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 30
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Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 645.12 GROUND ELEVATION: 643.1	LOCATION: SCM Plant 2 DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 15 July 1990 INSPECTOR: S. Basham	
	DEPTH (Ft)	SMPL No.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	—					See log of FBMW-19D for description of stratigraphy.	
	—						
	—						
	5						
	—						
	—						
	—						
	10						
	—						
	—						
	15						
	—						
	—						
	20						
	—						
	—						
	25						
	—						
	—						
	30						
	—						
	—						
	35						
	—						
	—						
	40						

LOG OF BORING FBMW-19S FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO			
CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 31

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 641.39		LOCATION: Elkem Metals DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750				DATE DRILLED: 23 July 1990 INSPECTOR: N. Bigman			
GROUND ELEVATION: 638.9		DEPTH (Ft)	SAMPL No.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS	
		1	SS	11	1.9		Stiff, moist, dark brown, Sandy CLAY (CL); trace roots & organic material	Lacustrine OVA=BG	
		2	SS	7	1.8		Medium dense, lt. brown SAND and GRAVEL (SP)		
		5	3	SS	10	2.0			Firm, moist, lt brwn & gry Sandy CLAY (CL) Medium dense, moist, light brown, fine SAND (SW)
			4	SS	14	2.0		Stiff, dry to moist, med. brown SILT (ML); some rust colored, fine sand partings; varved	OVA=BG
			5	SS	14	2.0		Stiff, dry to moist, gray SILT; with few sand partings, trace sand seams	
		10	6	SS	12	2.0		Med. dense, moist, gry, fine SAND (SW), trace iron staining ...becomes wet, without staining	
			7	SS	19	2.0		Stiff, dry to moist, gray SILT (ML); some sand ...8-inch moist, gray clay layer	Lacustrine
		15	8	SS	10	0.1		...8-inch moist to wet, gray, fine sand Stiff, dry to moist, de-tinted gray SILT; some sand	
			9	SS	16	2.0		Very stiff, dry to moist, gray Silty CLAY (CL-ML); trace sand and fine to medium gravel	
			10	SS	13	2.0			Till
		20	11	SS	18	2.0		Very stiff, dry to moist, gray Silty CLAY (CL-ML); few sand and trace fine to medium gravel	
			12	SS	15	2.0			
		25	13	SS	11	2.0		...1-inch shale fragment; Very stiff, dry to moist, gray Silty CLAY; trace sand and gravel	
			14	SS	25	1.2			
			15	SS	25	2.0		...2-inch layer of shale gravel (broken cobble)	
		30	16	SS	21	2.0		Very stiff, dry to moist, gray Silty CLAY (CL-ML); trace sand and few fine to medium gravel	
			17	SS	28	2.0			
		35	18	SS	31	2.0		Very stiff, dry, gray Silty CLAY (CL-ML); trace sand and few fine to medium gravel	
			19	SS	32	2.0			
		40	20	SS	30	2.0			
LOG OF BORING FBW-20D FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO									
CHECKED BY: JCL		DATE: 1 NOV 1990		PROJECT No.: 86C3609D-230			FIGURE No.: 32		

Woodward-Clyde Consultants

Page 2 of 2

DEPTH (Ft)	SMPL NO.	TYPE	B/Ft	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
—	21	SS	>65	2.0	Very stiff, dry, gray Silty CLAY (CL-ML); trace sand, few fine to medium gravel	Till
—	22	SS	>150	2.0	Gray SHALE (42.5 ft.)	Bedrock
45	23	NX		1.9	Unweathered, blocky, thin bedded, gray and dark gray beds	RQD=0%
—	24	NX		4.7	Unweathered, blocky to fractured, thin bedded SHALE; gray and dark gray beds	RQD=25%
50						
—					End of boring at 51 feet.	
—					Water encountered at 11.0 feet	
55						
—						
60						
—						
65						
—						
70						
—						
75						
—						
80						
—						
85						

LOG OF BORING FBMW-20D

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

FIGURE No.: 32

CHECKED BY: JCL

DATE: 1 NOV 1990

PROJECT No.: 86C3609D-230

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 640.72 GROUND ELEVATION: 638.9	LOCATION: Elkem Metals DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 25 July 1990 INSPECTOR: N. Bigman, B. Schmidt	
	DEPTH (Ft)	SMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	5					See log of FBW-20D for description of stratigraphy.	
	10						
	15						
	20						
	25						
30							
35							
40							


LOG OF BORING FBW-20S

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 33
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Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 641.91		LOCATION: Elkem Metals DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME HT75				DATE DRILLED: 12 July 1990 INSPECTOR: S. Basham	
DEPTH (Ft)	SAMPL NO.	TYPE	B/FT	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS	
—	1	SS	7	1.4	Firm, moist, gry w/ iron staining CLAY (CL); trace orange, orang-bwn, lt. bwn and iron stained layers	Lacustrine	
—	2	SS	10	1.9	Stiff CLAY; trace gravel		
5	3	SS	11	1.9	Stiff CLAY; some silt lenses		
—	4	SS	11	2.3	Stiff CLAY; some silt/fine sand		
—	5	SS	15	2.0	Stiff CLAY; trace gravel and silty sand lenses		
10	6	SS	12	2.2	Stiff gray CLAY; vertical iron staining, trace shale gravel		
—	7	SS	16	2.2	Very stiff gray CLAY; vertical iron staining, trace shale gravel ...shale cobble		
15	8	SS	19	2.1		OVA=2.0 Lacustrine	
—	9	SS	33	2.3	Hard, moist to dry, gray Silty CLAY (CL-ML); some shale gravel	Till	
—	10	SS	30	2.1			
20	11	SS	33	2.1			
—	12	SS	>70	1.5		Till	
—	13	NQ		1.2	Gray SHALE (23.0 ft.)	Bedrock	
25	14	NQ		5.1	Highly weathered, blocky, thin bedded		
—	15	NQ		1.5			
30					End of boring at 31.6 feet.		
—							
35							
—							
40							


ELEVATION TOP OF RISER PIPE: 641.52 GROUND ELEVATION: 639.21	LOCATION: Elkem Metals DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME HT75					DATE DRILLED: 13 July 1990 INSPECTOR: S. Basham	
	DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	—					See log of FBW-21S for description of stratigraphy.	
	—						
	—						
	5						
	—						
	—						
	10						
	—						
	—						
	15						
	—						
	—						
	20						
	—						
	—						
	25						
	—						
	—						
	30						
	—						
	—						
	35						
	—						
	—						
	40						

LOG OF BORING FBW-21S FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO			
CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 35

Woodward-Clyde Consultants

ELEVATION TOP OF RIGER PIPE: 641.46 GROUND ELEVATION: 639.26	LOCATION: Plasticolors DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME HT75					DATE DRILLED: 2,3 July 1990 INSPECTOR: S. Shubat	
	DEPTH (FI)	SAMPL. NO.	TYPE	B/FT	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	1	SS		2.0	Soft, moist, brown, Silty CLAY (CL); roots, some fine sand	Lacustrine OVA=BG	
	2	SS		0.1	Soft, moist, brown and gray mottled, CLAY (CL); roots	OOVA=0.8	
5	3	SS	3	1.4	Soft, moist, gray mottled, CLAY; roots & trace fine sand	OVA=1.51	
	4	SS	17	2.0	Very loose, wet, brown SILT and fine SAND (SM)	OVA=0.2	
	5	SS	9	2.0	Very stiff, moist, bwn, iron stained Silty CLAY; (CL)	OVA=0.6	
10					V. stiff, moist, gry, iron stained Silty CLAY; some sand		
	6	SS	7	1.9	Stiff, moist, gray CLAY (CL); trace fine sand	OVA=1.2	
	7	SS	9	2.0		OVA=18	
15	8	SS	9	1.8		OVA=2.0 Lacustrine	
	9	SS	18	2.0	Very stiff, moist, gray Silty CLAY (CL-ML); trace fine sand	Till OVA=50.0 OVA=50.0	
20	10	SS	28	2.0			
	11	SS	48	2.0	Hard, moist, gray Silty CLAY; trace fine sand	OVA=55.0	
	12	SS	31	2.0		OVA=90.0	
25	13	SS	29	2.0	Very stiff, moist, gray Silty CLAY; trace fine sand		
	14	SS	52	2.0	Hard, moist, gray Silty CLAY; trace fine sand		
30	15	SS	75	2.0		Till	
	16	NQ		1.3	Gray SHALE (29.8 ft.) Highly weathered, thinly bedded, with some black beds ...becomes unweathered, with cone in cone structures	Bedrock RQD=0%	
35							
	17	NQ		1.3		RQD=0%	
	18	NQ		2.1	End of boring at 40 feet. Water encountered at 4.9 feet.	RQD=10%	
40							
LOG OF BORING FBW-24D FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO							
CHECKED BY: JCL		DATE: 1 NOV 1990		PROJECT No.: 86C3609D-230		FIGURE No.: 36	

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 640.90 GROUND ELEVATION: 639.26 	LOCATION: Plasticolors DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME HT75					DATE DRILLED: 3 July 1990 INSPECTOR: S. Shubat	
DEPTH (Ft)	SMPL No.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS	
— — — 5 — — — 10 — — — 15 — — — 20 — — — 25 — — — 30 — — — 35 — — — 40					See log of FBW-24D for description of stratigraphy.		
LOG OF BORING FBW-24S FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO							
CHECKED BY: JCL		DATE: 1 NOV 1990		PROJECT No.: 86C3609D-230		FIGURE No.: 37	

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 645.18		LOCATION: SCM Plant 1 DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME HT75				DATE DRILLED: 10 July 1990 INSPECTOR: S. Basham			
GROUND ELEVATION: 642.8		DEPTH (Ft)	SAMPL NO.	TYPE	B/FT	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS	
		1	SS	17	0.9		Brown TOPSOIL	Lacustrine	
		2	SS	13	2.3		Stiff, moist/dry gray w/ orange CLAY (CL); tr. grav.		
		5	3	SS	10	1.5		Stiff, moist, yel-bwn w/ blk mottling Sandy CLAY	
		4	SS	15	2.1		Stiff, moist, brown CLAY and sand; tr. f. gravel		
		5	SS	12	2.2		Stiff, brown to gray, with trace black and iron-stained partings CLAY and sand; trace fine gravel		
		10	6	SS	20	2.2		...three layers of yellow sand	
		7	SS	21	2.1		Very stiff CLAY and sand; trace fine gravel	Lacustrine	
		15	8	SS	29	2.2		Very stiff Sandy CLAY; trace fine gravel	Till
		9	SS	26	2.2		Very stiff, moist to dry, gray Silty CLAY (CL-ML); trace fine gravel		
		20	10	SS	67	1.8		Hard, moist to dry, gray Silty CLAY; trace f. gravel	Till
		25	11	SS	>55	1.3		Gray SHALE (19.0 ft.)	Bedrock
		30	NQ		3.5		Highly weathered, blocky, thin bedded		
		35	NQ		5.0				
		40					End of boring at 28.5 feet.		

LOG OF BORING FBW-25D

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO


CHECKED BY: JCL

DATE: 1 NOV 1990

PROJECT No.: 86C3609D-230

FIGURE No.: 38

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 644.92 GROUND ELEVATION: 642.8 	LOCATION: SCM Plant 1 DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME HT75					DATE DRILLED: 11 July 1990 INSPECTOR: S. Basham	
	DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
—						See log of FBMW-25D for description of stratigraphy.	
5							
10							
15							
20							
25							
30							
35							
40							
LOG OF BORING FBMW-25S FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO							
CHECKED BY: JCL		DATE: 1 NOV 1990		PROJECT No.: 86C3609D-230		FIGURE No.: 39	

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 640.74		LOCATION: Linchem DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME HT75					DATE DRILLED: 25 July 1990 INSPECTOR: S. Basham	
GROUND ELEVATION: 638.3		DEPTH (Ft)	SAMPL NO.	TYPE	B/FT	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	1	SS	7	1.9	Firm, moist to dry, brown with orange and gray mottling, CLAY (CL)	Lacustrine		
	2	SS	5	2.2	Firm, moist, gray with iron staining CLAY			
	5	3	SS	5	2.2		Firm, moist, gray w/ iron staining Silty CLAY (CL)	
	4	SS	10	2.0	Stiff, wet, dark brown Silty CLAY			
	5	SS	4	2.2	Stiff, wet, gray Silty CLAY			
	10	5	SS	4	2.2		Interbed., soft, moist, gray, CLAY and Silty CLAY (CL)	
	6	SS	6	2.2	Interbedded, firm, moist, gray, CLAY and Silty CLAY			
	7	SS	7	2.0	...5-inch orange silty sand layer			
	15	8	SS	4	1.9		Firm, moist, gray CLAY (CL); trace gravel	
	9	SS	7	1.5	Soft, moist, gray CLAY; trace gravel			
	10	SS	3	2.0	Firm, moist, gray CLAY; trace gravel	Lacustrine		
	20	11	SS	15	2.2		Soft, moist, gray CLAY; trace gravel	
	12	SS	17	1.8	Stiff, moist, gray CLAY; trace gravel			
	25	13	SS	19	2.0		Stiff, moist to dry, gray Silty CLAY (CL-ML); some gravel ...becomes very stiff	
	14	SS	32	2.2	Hard, moist to dry, gray Silty CLAY; some gravel			
	15	SS	38	2.0				
	30	16	SS	27	2.0		Very stiff, moist to dry, gray Silty CLAY; some gravel	
	17	SS	40	2.0	Hard, moist to dry, gray Silty CLAY; some gravel			
	35	18	SS	>69	1.0			
19	NQ	5.0	Gray SHALE (35.0 ft.)	Till				
40			Highly weathered, thin bedded Slightly weathered, thin bedded, gray SHALE					
							Bedrock	

LOG OF BORING FBMW-26D
 FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 40
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DEPTH (Ft)	SAMPL NO.	TYPE	B/Ft	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
20	20	NQ		5.0	Gray SHALE Slightly weathered, thin bedded	
45					End of boring at 45.0 feet. Water encountered at 5.5 feet.	
50						
55						
60						
65						
70						
75						
80						
85						

LOG OF BORING FBMW-26D
FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO


CHECKED BY: JCL

DATE: 1 NOV 1990

PROJECT No.: 86C3609D-230

FIGURE No.: 40

Woodward-Clyde Consultants

ELEVATION TOP OF RIGER PIPE: 640.33 GROUND ELEVATION: 638.3 	LOCATION: Linchem DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME HT75					DATE DRILLED: 26 July 1990 INSPECTOR: S. Basham	
	DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
5					See log of FBW-26D for description of stratigraphy.		
10							
15							
20							
25							
30							
35							
40							

LOG OF BORING FBW-26S FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO			
CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 41


Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 645.80 GROUND ELEVATION: 643.20		LOCATION: CEI - COOK ROAD AT R.R. TRACKS DATE DRILLED: 30 June, 1 July 1990 DRILLING FIRM: Mateco Drilling Company INSPECTOR: S. Shubat DRILLING RIG TYPE: CME 750				
DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
—	1	CS	4.5	3.6	Hard, dry, gray, brown and iron stained mottled, Silty CLAY (CL); roots, worms, magnesium oxide flakes	Fill
5	2	CS	4.5	3.4	Moist Silty CLAY; roots and coarse gravel	Fill
—					Hard, moist, gray, brown and olive green mottled, Silty CLAY (CL); some coarse shale sand	Lacustrine
10	3	CS	4.5	3.8		Lacustrine
—					Gray Shale (9.6 ft.) Highly weathered, thin bedded	Bedrock
15	4	NX		1.0	Unweathered, thin bedded, gray SHALE	
—					End of boring at 18.3 feet. Water encountered at 9.6 feet.	
20						
—						
25						
—						
30						
—						
35						
—						
40						

No fill
?
Pick 9'

LOG OF BORING FBW-28D FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO			
CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 42

Woodward-Clyde Consultants

ELEVATION TOP OF RISER PIPE: 645.02 GROUND ELEVATION: 643.2 	LOCATION: CEI - COOK ROAD AT R.R. TRACKS DRILLING FIRM: Mateco Drilling Company DRILLING RIG TYPE: CME 750					DATE DRILLED: 1 July 1990 INSPECTOR: S. Shubat	
	DEPTH (Ft)	SAMPL NO.	TYPE	P.P.	REC	DESCRIPTION OF STRATIGRAPHY	COMMENTS
	5					See log of FBW-28D for description of stratigraphy.	
	10						
	15						
	20						
	25						
	30						
	35						
	40						

LOG OF BORING FBW-28S

FIELDS BROOK SOURCE CONTROL - ASHTABULA, OHIO

CHECKED BY: JCL	DATE: 1 NOV 1990	PROJECT No.: 86C3609D-230	FIGURE No.: 43
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Woodward-Clyde Consultants

AWARE
INCORPORATED

TEST BORING LOG
FBMW - 6s

BORING NO.
314

PROJECT: Hydrogeologic Investigations

SHEET NO. 1 of 1

CLIENT: PNT Company Extension Plant

PROJECT NO. 6726

CONTRACTOR: Matthews Associates Inc.

EQUIPMENT: CME 550

TYPE: Riser Intake
Stainless Stainless
DIAMETER: 2" 2"

DRILLING METHOD: Hollow stem auger

GROUND WELL PROTCG
ELEV.: 630.2 633.2

COUPLING: Flush Flush

TYPE: CASING SAMPLER CORE TUBE

DATE STARTED: 9-2-87

WELL CONSTRUCTION

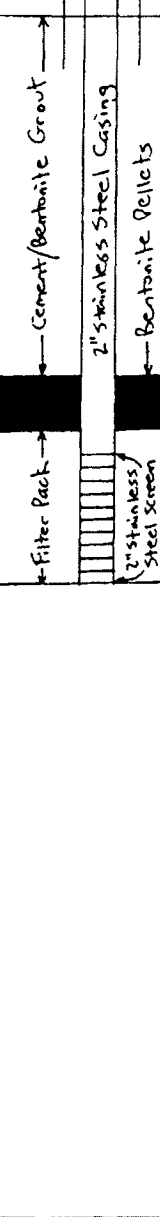
SAMPLE

DIAM WEIGHT FALL

DATE COMPLETED: 9-3-87

DRILLER: Jim Dredging

INSPECTOR: Barry Brumley



NO. TYPE BLOWS PER 6 inches

CLASSIFICATION

REMARKS

No samples collected; For
Classification, see Log
for well 305

End boring 22'

AWARE
INCORPORATED

TEST BORING LOG
FBMW - GD

BORING NO.
305

PROJECT: Hydrogeologic Investigations
CLIENT: RMT Company - Extension Plant
CONTRACTOR: Mathes and Associates

EQUIPMENT: CME 55-AT

SHEET NO 1 of 1
PROJECT NO. 6726

	RISER	INTAKE
TYPE	Stainless	Stainless
DIAMETER	2"	2"
COUPLING	Flush	Flush

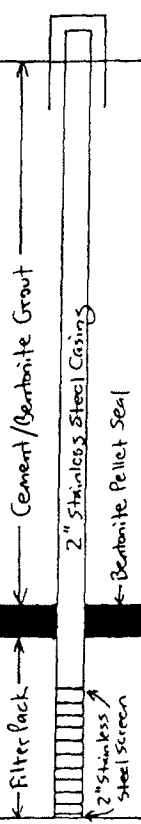
DRILLING METHOD: Hollow Stem Auger			
CASING	SAMPLER	CORE	TUBE
TYPE	Barrel		
DIAM	3"		
WEIGHT			
FALL			

GROUND	WELL	PROTCSG
ELEV.: 630.3	633.1	
DATE STARTED: 4-14-77		
DATE COMPLETED: 4-14-77		
DRILLER: Chuck Harris		
INSPECTOR: Barry Brawley		

WELL
CONSTRUCTION

SAMPLE

DEPTH FT	NO.	TYPE	BLOWS PER 6 inches	CLASSIFICATION	REMARKS
0				<u>TOPSOIL</u>	
				<u>GLACIAL TILL</u>	
	1	Grab		3' Mottled orange-brown-gray SILT and CLAY Moist	Vertical fractures with oxidized surfaces
5	2	Grab		5' Med brown SILT with Clay, little Sand. Fragments of fractured Shale Dry to slightly moist	
10	3	Grab		9' Med gray CLAY, some Silt, little Sand. Fragments of fractured Shale. Slightly moist.	
15	4	Grab		15' Med gray CLAY, little Silt. Fractured shale fragments and rounded pebbles. Slightly moist to dry	Soil "pills" while drilled
20	5	Grab		20' Med gray CLAY with fractured Shale. Grades to weathered SHALE. Relic bedding. Dry	
25	6	Grab		22' Med gray CLAY with fractured Shale. Grades to weathered SHALE. Relic bedding. Dry	
27.5	7	Grab		27.5' <u>BEDROCK</u>	27.0
30				Gray SHALE. Platy, soft, dry	End boring 29.5'
35					
40					
45					



AWARE INCORPORATED				TEST BORING LOG FBMW-9s				NO. RMI-7S			
PROJECT: KCKA FACILITY INVESTIGATION								SHEET NO. 1 of 1			
CLIENT: RMI SODIUM PLANT								PROJECT NO. 6120			
DRILLING DATA				SAMPLING METHODS							
CONTRACTOR: PENNSYLVANIA DRILLING CO.				SAMPLER		TUBE		CORE			
DRILLER: BURNIE GOLLINER				TYPE		5' ext. split tube					
EQUIPMENT: ROTARY 8" OD AUGERS				DIAMETER		4"					
METHOD:				OTHER							
WELL CONSTRUCTION				WELL DEVELOPMENT				GROUND WELL PROCSG			
RISER		INTAKE		METHOD: COMPRESSED AIR		ELEV 641.2		643.61			
MATERIAL PVC		PVC		DURATION: 1 hr.		DATE STARTED: 10-13-88					
DIAMETER 2"		2"		YIELD:		DATE COMPLETED: 10-13-88					
COUPLING THREADED		THREADED		OTHER: N/A clean		INSPECTOR: ROB GUIDRY					
WELL CONSTRUCTION		SAMPLE		CLASSIFICATION (AFTER BURNISTER, 1959)				REMARKS			
DEPTH (FEET)		NO. TYPE BLOWS PER 6 INCHES									
0		1		SEE RMI-7D FOR GEOLOGIC DESCRIPTION				COVER and FILL			
5		2						7.1'		WEATHERED TILL	
10		3						10.3		UNWEATHERED TILL	
15				END OF BORING							
20											
25											
30											
35											
40											

AWARE
INCORPORATED

TEST BORING LOG
FBMW-9D

NO. RMI-7D

PROJECT: KRA FACILITY INVESTIGATION
CLIENT: RMI SODIUM PLANT

SHEET NO. 1 of 2
PROJECT NO. 6120

DRILLING DATA		SAMPLING METHODS			
CONTRACTOR:	PENNSYLVANIA DRILLING CO.		SAMPLER	TUBE	CORE
DRILLER:	BURNIE GOLLIHUE	TYPE		5' CONT. SPLIT TUBE	
EQUIPMENT:	ROTARY 13" O.D. Auger to 59'	DIAMETER		4"	
METHOD:	5 7/8" Bit to 76.65'	OTHER			
WELL CONSTRUCTION		WELL DEVELOPMENT		GROUND	WELL PROTCSG
	RISER	INTAKE	METHOD: COMPRESSED AIR	ELEV 641.3	642.41
MATERIAL	PVC	PVC	DURATION: 45 min	DATE STARTED: 9-30-88	
DIAMETER	2"	2"	YIELD: wet DRY	DATE COMPLETED: 10-17-88	
COUPLING	THREADED	THREADED	OTHER:	INSPECTOR: ROB GUIDRY	

WELL CONSTRUCTION	DEPTH (FEET)	SAMPLE			CLASSIFICATION (AFTER BURNISTER, 1939)	REMARKS
		NO.	TYPE	BLOWS PER 6 INCHES		
	0	1			Cobbles, Gravel, SILT, CLAY, concrete, fine sand. UNCONSOLIDATED	COVER and FILL
	5	2			7.1'	
	10				GRAY SILTY CLAY, trace (-) poorly sorted GRAVEL. oxidized fractures present	WEATHERED TILL
	15	3			10.3'	
	20				GRAY CLAY, trace (-) Gravel	UNWEATHERED TILL
	25	4				
	30	5				
	35	6			grayest	
	40	7			GRAY CLAY + SILT, trace (-) fine sand	
	45	8			33-37.3' small red clay inclusions and black laminae present	
	50				37.3'	
	55				GRAY SILTY CLAY, trace fine Gravel	
	60					
	65					
	70					
	75					
	80					
	85					
	90					
	95					
	100					

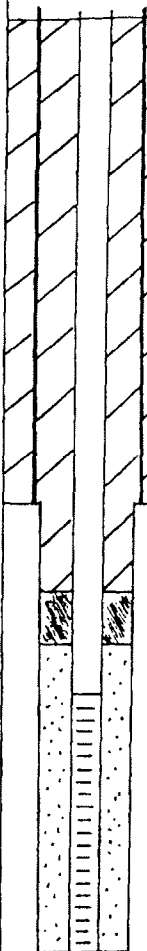
AWARE
INCORPORATED

TEST BORING LOG
FBMW-9D

NO. RMI-7D

PROJECT: RCRA FACILITY INVESTIGATION
CLIENT: RMI SODIUM PLANT

SHEET NO. 2 of 2
PROJECT NO. 6120

WELL CONSTRUCTION	DEPTH (FEET)	SAMPLE			CLASSIFICATION (AFTER BURNISTER, 1959)	REMARKS
		NO.	TYPE	BLOWS PER 6 INCHES		
	9				GRAY SILTY CLAY, trace fine GRAVEL	
	45					
	10				ANGULAR SHALE FRAGMENTS INCREASE IN SIZE AND FREQUENCY	
	50					
	51.6'					
	52.3'				MEDIUM TO COARSE SAND, little Clayey SILT, trace GRAVEL	
	55				GRAY SILTY CLAY, trace fine GRAVEL	
	12					
	58.1'					
	60				GRAY SHALE BEDROCK 60.0'	CHARRIN SHALE
	60.5'				SOFT DRILLING 60.5'	
	65					
	66.0'					
	66.3'				SOFT DRILLING 66.3'	
	70					
	75					
	76.65'				END OF BORING	
	80					

AWARE
INCORPORATED

TEST BORING LOG
FBMW-105

NO. *RM1-4S*

PROJECT: *KCRA FACILITY INVESTIGATION*
CLIENT: *RM1 SODIUM PLANT*

SHEET NO. *1 of 1*
PROJECT NO. *6120*

DRILLING DATA				SAMPLING METHODS			
CONTRACTOR: <i>PENNSYLVANIA DRILLING CO.</i>				SAMPLER	TUBE	CORE	
DRILLER: <i>BURNIE GOLLINER</i>				TYPE	<i>5' CONT. SPIRIT TUBE</i>		
EQUIPMENT: <i>ROTARY</i>				DIAMETER	<i>4"</i>		
METHOD:				OTHER			
WELL CONSTRUCTION				WELL DEVELOPMENT		GROUND	WELL PROTCSSG
RISER		INTAKE		METHOD: <i>Compressed Air</i>		ELEV <i>637.2</i>	<i>639.99</i>
MATERIAL <i>PVC</i>		<i>PVC</i>		DURATION: <i>1.5 hrs</i>		DATE STARTED: <i>10-13-88</i>	
DIAMETER <i>2"</i>		<i>2"</i>		YIELD:		DATE COMPLETED: <i>10-13-88</i>	
COUPLING <i>THREADED</i>		<i>THREADED</i>		OTHER: <i>WTR clay</i>		INSPECTOR: <i>ROB GUIDRY</i>	
WELL CONSTRUCTION	DEPTH (FEET)	SAMPLE		CLASSIFICATION (AFTER BURNISTER, 1959)		REMARKS	
		NO.	TYPE	BLOWS PER 6 INCHES			
	0	1			<i>SEE RM1-4D FOR GEOLOGIC DESCRIPTION</i>	<i>1.7' CLAY CAP</i>	
	5	—				<i>WEATHERED TILL</i>	
	2					<i>2.1</i>	
	10	—				<i>UNWEATHERED TILL</i>	
	3						
	15					<i>15'</i>	
						<i>END OF BORING</i>	
	20						
	25						
	30						
	35						
	40						

AWARE
INCORPORATED

TEST BORING LOG
FBMW - 10 D

NO. RMI-4D

PROJECT: RCKA FACILITY INVESTIGATION
CLIENT: RMI SODIUM PLANT

SHEET NO. 1 of 2
PROJECT NO. 6120

DRILLING DATA		SAMPLING METHODS		
CONTRACTOR: PENNSYLVANIA DRILLING CO.		SAMPLER	TUBE	CORE
DRILLER: BURNIE GOLLIHUR		TYPE	5' CONT. SPLIT TUBE	
EQUIPMENT: ROTARY 13" OD AUGERS 6048.8'		DIAMETER	4"	
METHOD: 5 3/4" BIT to 64.35'		OTHER		
WELL CONSTRUCTION		WELL DEVELOPMENT		
RISER	INTAKE	METHOD: COMPRESSED AIR	ELEV	GROUND WELL PROTCSG
MATERIAL: PVC	PVC	DURATION: 1.5 hrs	637.4	639.59
DIAMETER: 2"	2"	YIELD:	DATE STARTED: 10-4-88	
COUPLING: THREADED	THREADED	OTHER: WTR SILTY	DATE COMPLETED: 10-18-88	
			INSPECTOR: ROB GUIDRY	

WELL CONSTRUCTION	DEPTH (FEET)	SAMPLE			CLASSIFICATION (AFTER BURNISTER, 1959)	REMARKS
		NO.	TYPE	BLOWS PER 6 INCHES		
	0				Brown silty clay	1.7' CLAY CAP
	1				BLACK PEAT	2' WEATHERED TILL
	5				Mottled brown and gray silty clay oxidized fractures present	5.4'
	2				Brown silt	6.4'
	10				Mottled brown and gray silty clay, trace (-) fine gravel oxidized fractures	8.1'
	3				Gray silty clay, trace (-) fine gravel	14.4'
	15				Gray clayey silt, trace fine sand	15.3'
	4				Gray clay grades to	
	20				Gray silty clay, trace fine sand	20'
	5				Gray fine sand	21'
	25				Laminated fine sand, clay, and silty clay. Black, gray in color	23.7'
	6				Gray silty clay, trace fine sand	
	30					
	7					
	35					35'
	8				Gray silty clay, trace (+) gravel	
	40					

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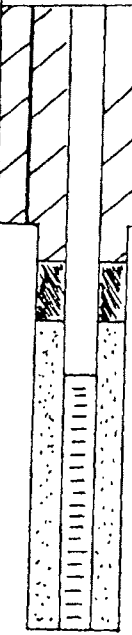
AWARE
INCORPORATED

TEST BORING LOG
FBMW-10D

NO. RMI-7V

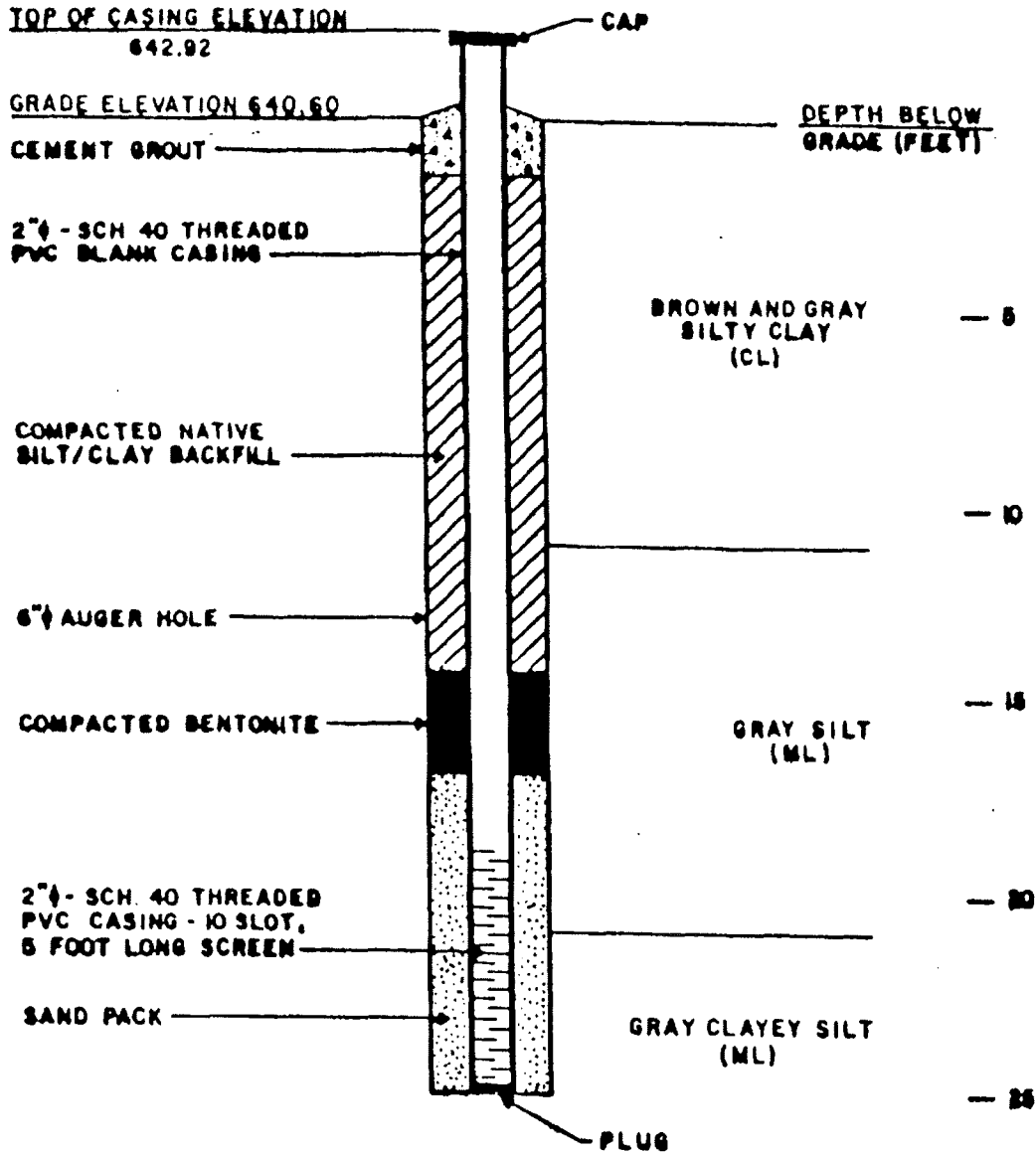
PROJECT: RCRA FACILITY INVESTIGATION
CLIENT: RMI SODIUM PLANT

SHEET NO 2 of 2
PROJECT NO 6120

WELL CONSTRUCTION	DEPTH (FEET)	SAMPLE			CLASSIFICATION (AFTER BURMISTER, 1959)	REMARKS
		NO	TYPE	BLOWS PER 6 INCHES		
	40	9				
	45	10				
	46.7'					
	50				GRAY SHALE BEDROCK	CHAGRIN SHALE
	55					
	60					
	64.35'					
	65				END OF BORING	
	70					

WELL
201

F15MW - 225



MONITORING WELL
CONSTRUCTION
LINDE WELDING

ENGINEERING-SCIENCE



FBMW-22D

LOCATION MAP										ENGINEERING-SCIENCE WELL LOG		PAGE 1 OF 3									
SEE FIGURE 1 Ground 639.97 Riser 639.47 ELEVATION										WELL NUMBER 301		LOCATION L-TEC, ASHTABULA									
										DATE 8-20-87		WEATHER									
										LOCATED BY J. M. STANGL		DRILLED BY MEG									
										DRILLING METHOD HOLLOW STEM AUGER		SAMPLING METHOD SPLIT SPOON									
GRAVEL PACK COARSE QTZ SAND										SEAL BENTONITE											
CASING TYPE PVC					DIAMETER 2.0'					LENGTH 53.0'					HOLE DIA.						
SCREEN TYPE PVC					SLIT 10					DIAMETER 2.0'					LENGTH 5.0'					TOTAL DEPTH 54.0'	
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	ORGANIC VAPORS (PPM)	DEPTH	SAMPLE RECOVERY	Penetration Resistance	LITHOLOGY/REMARKS				WELL COMPLETION								
						0			ROAD GRAVEL				STICK-UP								
						1			FILL												
						2															
						3															
						4															
						5		3													
						6		7													
						7		13													
						8			BROWN SILT AND GRAVEL FILL, RUST STAINS												
						9															
						10		7													
						11		14													
						12		28													
						13															
						14			STEEL BLUE SILT AND CLAY SLIGHT TRACE OF VERY FINE SAND												
						15		23													
						16		34													
						17		41													
						18															
						19															
						20															
						21															
						22															
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						25															
						26															
						27															
						28															
						29															
						30															

LEGEND

SAND
 BACKFILL

CASING

GROUT
 CEMENT

BENTONITE

WATER LEVEL

LYTECHNA 10/2/88

FBMW-22D (cont)

LOCATION MAP										ENGINEERING-SCIENCE WELL LOG		PAGE 2 OF 3			
SEE FIGURE 1										WELL NUMBER 301		LOCATION L-TEC, ASHTABULA			
										DATE 8-20-87		WEATHER			
										LOCATED BY J. M. STANGL		BOILED BY MEG			
										DRILLING METHOD HOLLOW STEM AUGER		SAMPLING METHOD SPLIT SPDRN			
										GRAVEL PACK COARSE QTZ SAND		SEAL BENTONITE			
ELEVATION										CASING TYPE PVC		DIAMETER 2.0' LENGTH 53.0'		HOLE DIA.	
SCREEN TYPE PVC										SLOT 10		DIAMETER 2.0' LENGTH 5.0'		TOTAL DEPTH 54.0'	
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	ORGANIC VARIOUS OTHER	DEPTH	SAMPLE RECOVERY	PORTATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION					
						20		50/6							
						21		NA							
						22									
						23									
						24									
						25		16	25'-27' SAME AS ABOVE						
						26		30	GREATER SAND CONTENT						
						27		20							
						28			27' SAME AS ABOVE						
						29			MORE SILT AND CLAY						
						30			TRACE GRAVEL						
						31									
						32									
						33									
						34		10	29.5' SAME AS ABOVE						
						35		14	GRAVEL CONTENT INCREASES						
						36		18	SLIGHT INCREASE IN SAND						
						37									
						38									
						39									
						40									
						41									
						42									
						43									
						44									
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						97									
						98									
						99									
						100									

LEGEND

SAND

GRAVEL

CASING

SCREEN

GROUT

CEMENT

BENTONITE

WATER LEVEL

L-TEC

ASHTABULA

WELL

LOG

PAGE

2

OF

3

FBMW-22D (cont)

LOCATION MAP		ENGINEERING-SCIENCE WELL LOG		PAGE 3 OF 3							
SEE FIGURE 1		WELL NUMBER 301		LOCATION L-TEC, ASHTABULA							
		DATE 8-20-87		WEATHER							
		LOCATED BY J. M. STANGL		BOLLER BY MEG							
		BOLLING METHOD HOLLOW STEM AUGER		SAMPLING METHOD SPLIT SPOON							
ELEVATION		GRAVEL PACK COARSE QTZ SAND		SEAL BENTONITE							
CASING TYPE PVC		DIAMETER 2.0'		LENGTH 53.0'							
SCREEN TYPE PVC		SLOT 10		DIAMETER 2.0'							
				LENGTH 5.0'							
				TOTAL DEPTH 54.0'							
MOISTURE CONTENT	SORTING	IDENTITY	PLASTICITY	SAMPLE NO.	ORGANIC MATTER %	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION	
						40			GRAY SILT AND GRAVEL SOME SHALE FRAGMENTS		
						41					
						42					
						43					
						44			45' GRAVEL AND SHALE FRAGMENTS INCREASE		
						45					
						46					
						47					
						48			50' INCREASE IN SHALE FRAGMENTS, PEBBLES		
						49					
						50					
						51					
						52			SHALE		
						53					
						54					
						55					
						56			BORE HOLE TERMINATED AT 54.0'		
						57					
						58					
						59					
LEGEND			SAND		CASING		GRAVEL		BENTONITE		WATER LEVEL
			BACKFILL		SCREEN		GRAVEL		BENTONITE		WATER LEVEL

FBMW-23D

LOCATION MAP										ENGINEERING-SCIENCE WELL LOG		PAGE 1 OF 3					
SEE FIGURE 1 Ground 641.53 Riser 643.63 ELEVATION										WELL NUMBER 314		LOCATION L-TEC, ASHTABULA					
										DATE 8-18-87		WEATHER					
										LOCATED BY J. M. STANGL		BOLLED BY MEG					
										DRILLING METHOD HOLLOW STEM AUGER		SAMPLING METHOD SPLIT SPOON					
GRAVEL PACK COARSE QTZ SAND										SEAL BENTONITE							
CASING TYPE PVC										DIAMETER 2.0'		LENGTH 42'		HOLE DIA.			
SCREEN TYPE PVC										SLOT 10		DIAMETER 2.0'		LENGTH 5.0'		TOTAL DEPTH 47.5'	
MOISTURE CONTENT	SORTING	ROCKY	PLASTICITY	SAMPLE NO.	ORGANIC VAPORS OFF	DEPTH	SAMPLE RECOVERY	PENETRATION RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION							
										STICK-UP							
						0		2	GRASS, TOP SOIL								
						1		10	BROWN GRADING TO TAN SILT								
						2											
						3											
						4		4									
						5		6									
						6		6									
						7											
						8											
						9											
						10		8	STEEL BLUE SILTY CLAY								
						11		16									
						12		17									
						13											
						14			MOIST AT 14.0'								
						15		13									
						16		22									
						17		23									
						18											
						19			STEEL BLUE VERY FINE SAND								
						20		3	WET AT 18.0'								

LEGEND: SAND (diagonal lines), BACKFILL (cross-hatch), CASING (solid), SCREEN (dashed), GROUT (dots), CEMENT (cross-hatch), BENTONITE (solid black), WATER LEVEL (wavy line)

LTE 11/2/84

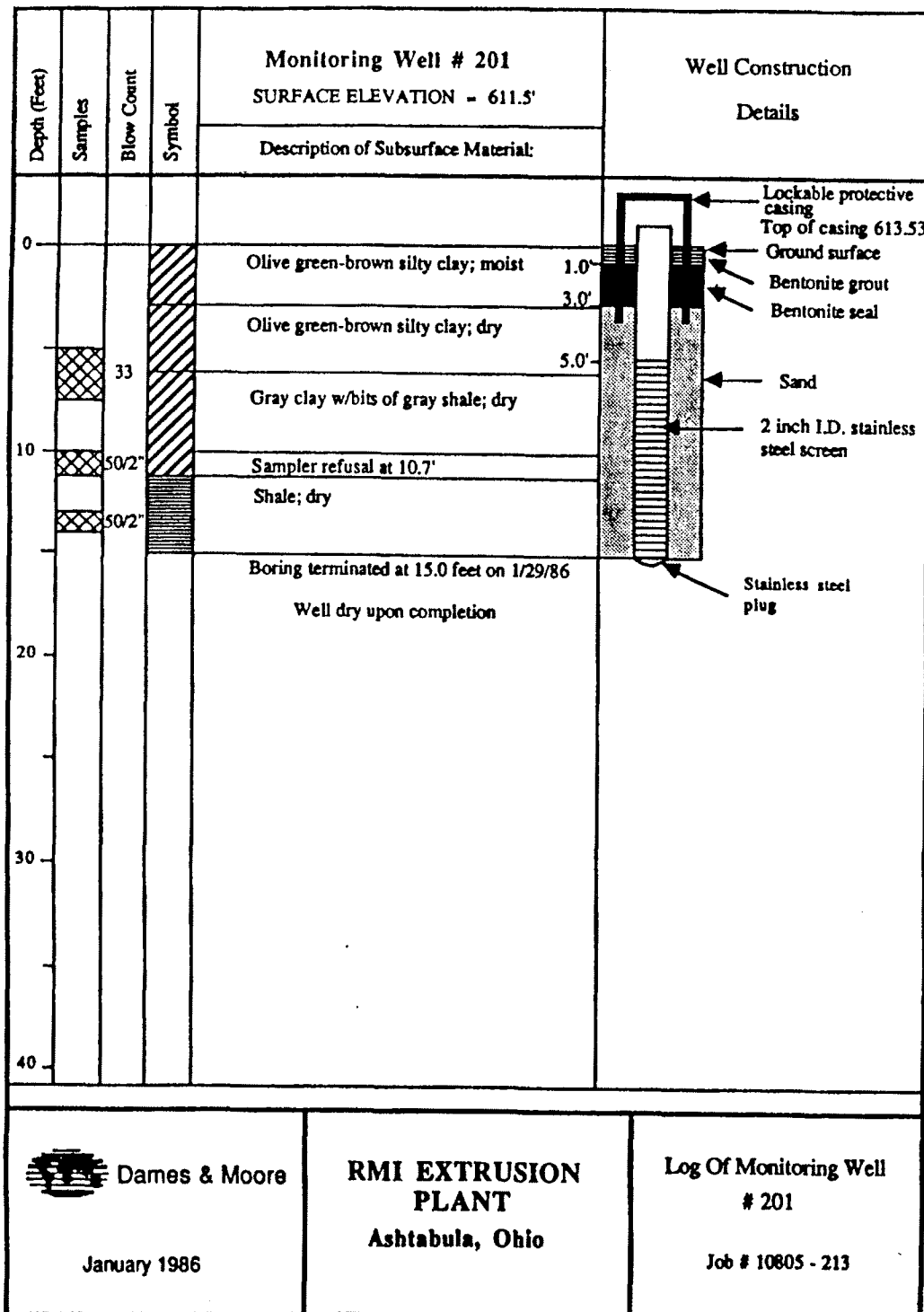
FBMW-23D (cont)

LOCATION MAP		ENGINEERING-SCIENCE WELL LOG		PAGE 2 OF 3							
SEE FIGURE 1		WELL NUMBER	314	LOCATION	L-TEC, ASHTABULA						
		DATE	8-18-87	WEATHER							
		LOCATED BY	J. M. STANGL	DRIILLED BY	MEG						
		DRIILLING METHOD	HOLLOW STEM AUGER	SAMPLING METHOD	SPLIT SPOON						
		GRAVEL PACK	COARSE QTZ SAND	SEAL	BENTONITE						
ELEVATION		CASING TYPE	PVC	DIAMETER	2.0'						
		SCREEN TYPE	PVC	LENGTH	42.0'						
		SLOT	10	DIAMETER	2.0'						
				LENGTH	5.0'						
				HOLE DIA.							
				TOTAL DEPTH	47.5'						
MOISTURE CONTENT	SORTING	DENSITY	PLASTICITY	SAMPLE NO.	ORGANIC MATTER (%)	DEPTH	SAMPLE RECOVERY	POSTHOLE RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION	
						20	5		STEEL BLUE VERY FINE SAND		
						21	8				
						22					
						23					
						24	5		STEEL BLUE SILT TO CLAYEY SILT		
						25	10				
						26	12		STEEL BLUE CLAY		
						27					
						28					
						29			STEEL BLUE CLAYEY SILT		
						30	9				
						31	20		GRAY SHALE		
						32	25		GRAY SILT WITH FINE GRAVEL		
						33					
						34					
						35	12				
						36	21		35.5' PEBBLES AND GRAVEL		
						37	22				
						38					
						39			36-40 LESS PEBBLES		
						40					
						41					
						42					
						43					
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						47					
						48					
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						99					
						100					

LEGEND: SAND (diagonal lines), BACKFILL (cross-hatch), CASING (solid), SCREEN (dashed), GROUT (dots), CEMENT (cross-hatch), BENTONITE (solid black), WATER LEVEL (inverted triangle), L-TEC 11 8/2/88

FBMW-23 D (cont)

LOCATION MAP		ENGINEERING-SCIENCE WELL LOG		PAGE 3 OF 3						
SEE FIGURE 1		WELL NUMBER	314	LOCATION	L-TEC, ASHTABULA					
		DATE	8-18-87	WEATHER						
		LOCATED BY	J. M. STANGL	BILLED BY	MEG					
		BILLING METHOD	HOLLOW STEM AUGER	SAMPLING METHOD	SPLIT SPOON					
ELEVATION		GRAVEL PACK	COARSE QTZ SAND	SEAL	BENTONITE					
CASING TYPE	PVC	DIAMETER	2.0'	LENGTH	42.0'					
SCREEN TYPE	PVC	SLOT	10	DIAMETER	2.0'					
		LENGTH	5.0'	HOLE DIA.						
		TOTAL DEPTH	47.5'							
NEUTRINE CONTENT	SOFTING	MOISTURE	PLASTICITY	SAMPLE NO.	DRILLING VARIOUS TYPES	DEPTH	SAMPLE RECOVERY	POSSIBLE RESISTANCE	LITHOLOGY/REMARKS	WELL COMPLETION
						40		28	SAME AS ABOVE	
						41		46		
						42			LIGHT GRAY SHALE GRAY CLAYEY SILT, LITTLE GRAVEL GRAY SILT WITH GRAVEL	
						43				
						44				
						45			WEATHERED SHALE SHALE	
						46				
						47			BORE HOLE TERMINATED 47.5	
						48				
						49				
						50				
						51				
						52				
						53				
						54				
						55				
						56				
						57				
						58				
						59				
<p>LEGEND: SAND (stippled), BACKFILL (diagonal lines), CASING (solid), SCREEN (dashed), BRUIT (wavy), COBALT (dots), BENTONITE (cross-hatch), WATER LEVEL (triangle)</p> <p>LTC 8/2/88</p>										



WELL
214

FBMW. 235

TOP OF CASING ELEVATION
641.70

CAP

GRADE ELEVATION 639.80

CEMENT GROUT

DEPTH BELOW
GRADE (FEET)

TOPSOIL

2" - SCH. 40 THREADED,
PVC BLANK CASING

BROWN AND GRAY
SILT (ML)

— 5

COMPACTED NATIVE
SILT/CLAY BACKFILL

— 10

6" - AUGER HOLE

COMPACTED BENTONITE

GRAY SILT
(ML)

— 15

2" - SCH. 40 THREADED
PVC CASING - 10 SLOT,
5 FOOT LONG SCREEN

— 20

SAND PACK

GRAY SILTY CLAY
(CL)

— 25

PLUG

MONITORING WELL
CONSTRUCTION
LINDE WELDING

ENGINEERING SCIENCE

ES